

# Laboratory Exhaust Systems

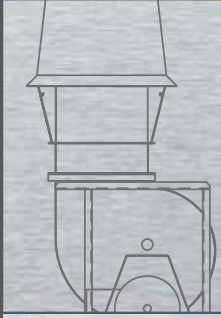
## Vektor™-CD Performance

Centrifugal • High Plume Dilution

AMCA  
260  
Tested

**VEKTOR™**

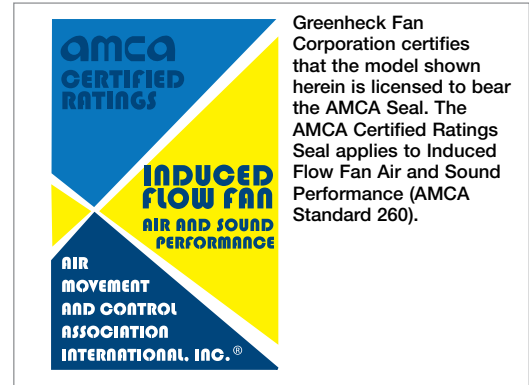
 **GREENHECK**  
Building Value in Air.



May  
2008

# Laboratory Exhaust Systems

## Model Vektor™-CD



## AMCA

The Greenheck Vektor™-CD High Plume Dilution Blowers are the first laboratory exhaust systems in the industry to bear the new AMCA 260 Laboratory Methods of Testing Induced Flow Fans Certified Ratings seal.

Each fan size has been tested in our AMCA Accredited Air and Sound Laboratories and their performance as cataloged is assured.

All sizes are licensed to bear the following AMCA Air and Sound Performance seals:

- ANSI/AMCA Standard 210, "Laboratory Methods of Testing Fans for Aerodynamic Performance Rating"
- AMCA Standard 260, "Laboratory Methods of Testing Induced Flow Fans for Rating"
- AMCA Standard 300, "Reverberant Room Method for Sound Testing of Fans"

## AMCA 260

The Air Movement and Control Association (AMCA) has introduced the new AMCA Standard 260, "Laboratory Methods of Testing Induced Flow Fans for Rating." Induced flow fans, also known as high plume dilution blowers, are used to dilute hazardous laboratory exhaust and disperse the exhaust high into the atmosphere, away from possible re-entrainment zones. Prior to AMCA Standard 260, high plume dilution blowers fell outside the scope of AMCA performance certification. Now, AMCA Standard 260 can provide consulting and facility engineers independent performance verification for critical laboratory exhaust applications that they insist on for other fans and blowers used in general HVAC applications.

Visit <http://www.AMCA.org> for more information regarding AMCA Standards and Publications.

# Laboratory Exhaust System Terminology

**Bypass Air** - Ambient air that is drawn through the bypass air plenum and mixed with the lab effluent to increase dilution and plume rise. Bypass Air is primarily utilized in variable volume applications to maintain a constant discharge volume.

**Dilution** - The ratio of the total fan outlet volume to the lab exhaust effluent volume.

**Effective Plume Rise** - Sum of the discharge plume rise, plus the added height of the laboratory exhaust system above the roof deck level.

**Entrained Air** - Air that is drawn through the windband and mixed with the lab effluent to increase the dilution and plume rise.

**Lab Exhaust Effluent** - Air that is being exhausted from the laboratory.

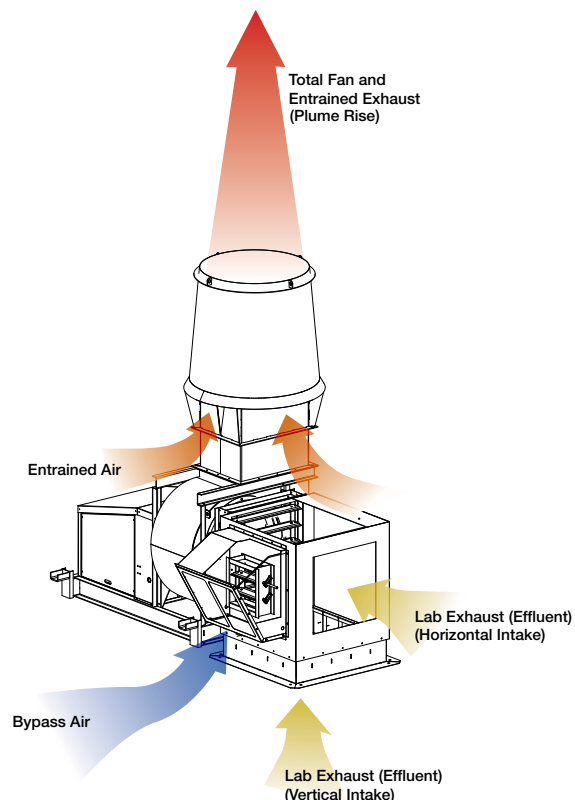
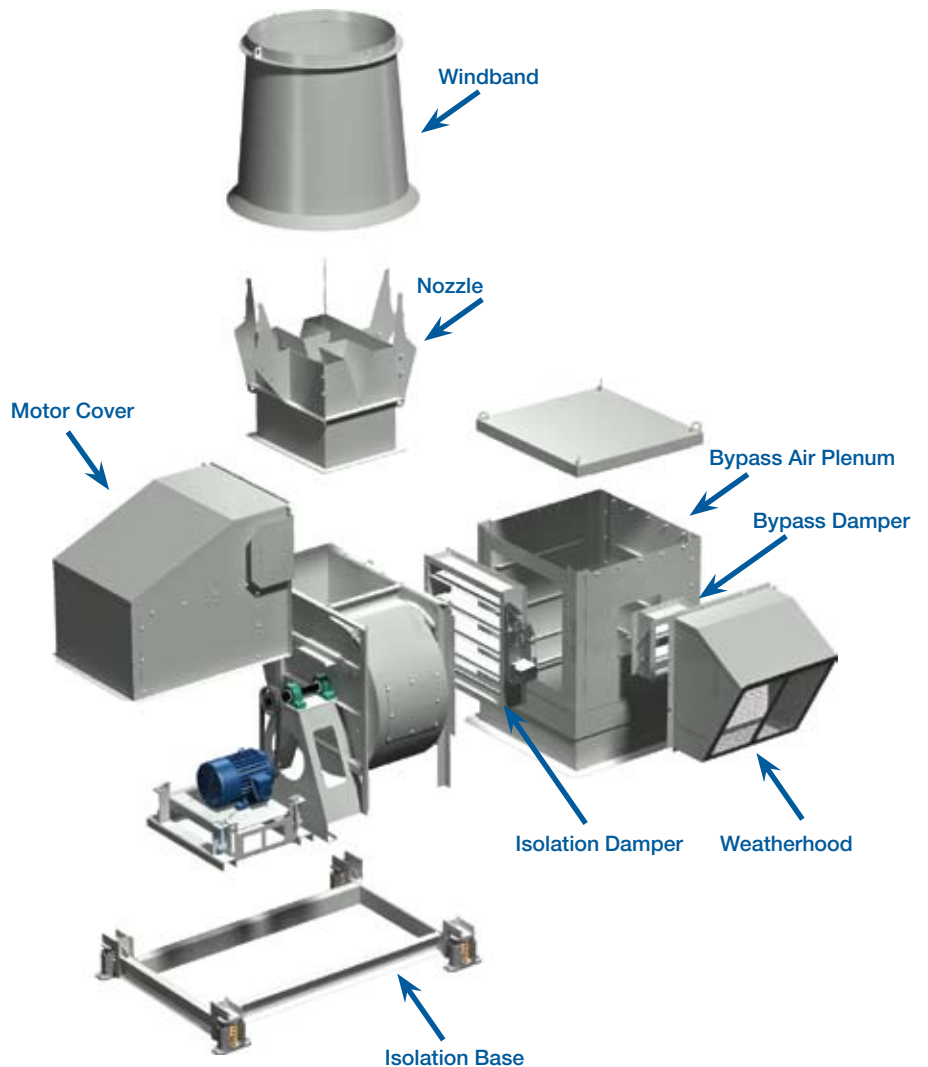
**Nozzle** - Located at the discharge of the fan housing, the nozzle is used to accelerate the exhaust air as it enters the windband.

**Plume Rise** - The height of the propelled lab effluent and dilution air above the discharge of the windband.

**Total Outlet Volume** - The sum of the lab exhaust effluent, bypass air, and the entrained air.

**Windband** - Device used to direct the lab exhaust effluent as it leaves the housing of the exhaust fan and entrain dilution air.

**Variable Nozzle Technology (VNT)** - Greenheck Vektor-CD exhaust fans offer multiple nozzles and windbands to optimize the plume rise, efficiency, and sound of the fan. Greater nozzle velocities result in increased air entrainment and higher plume rise.

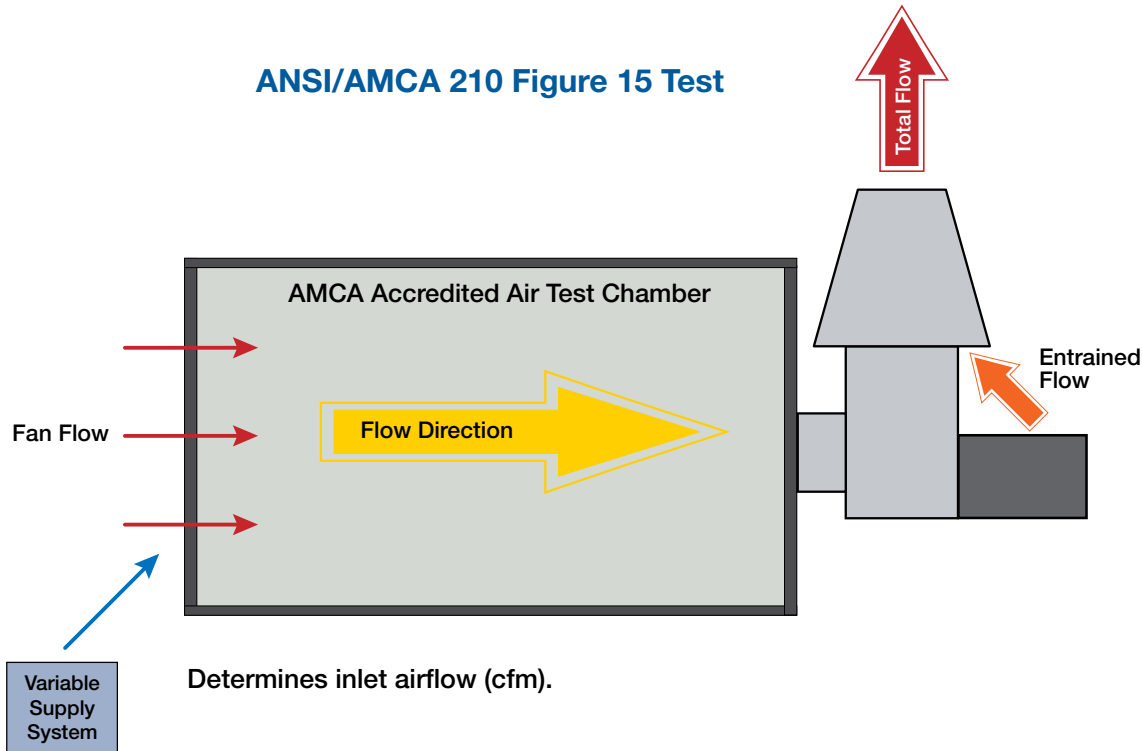


# AMCA 260 Air Test Procedure

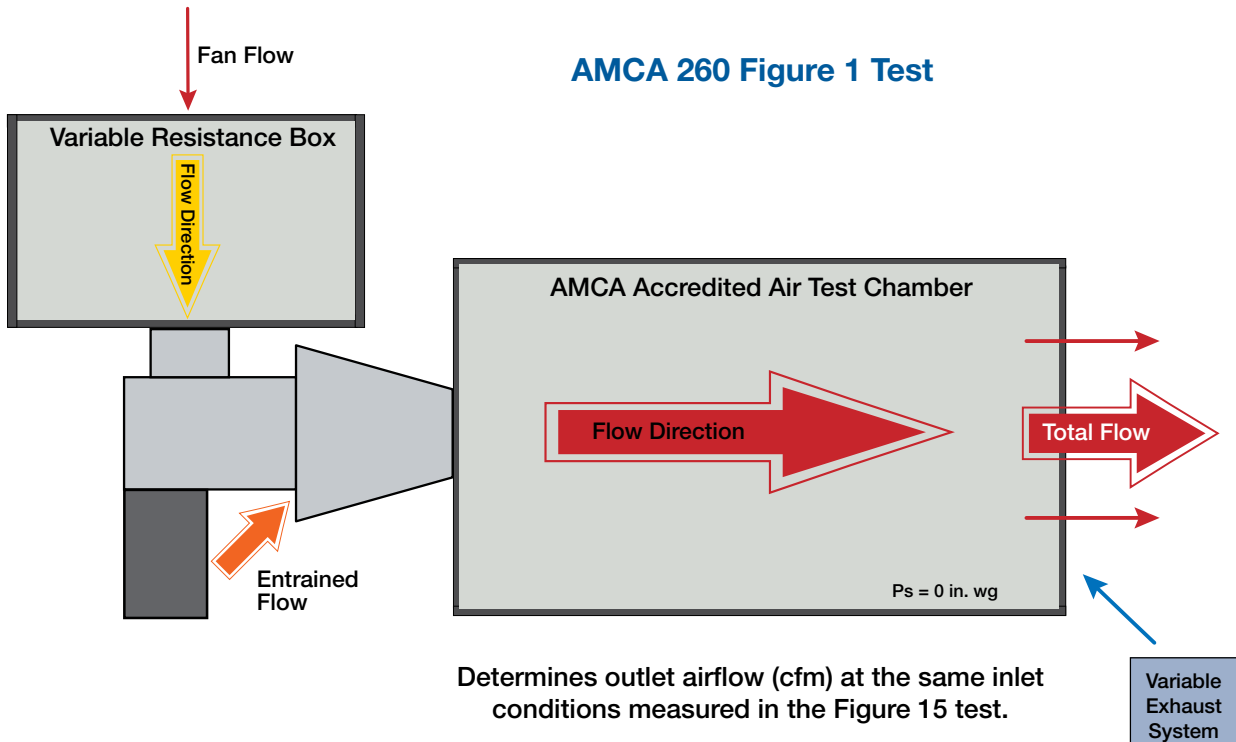
The following illustrations describe the procedure for determining the total laboratory exhaust fan discharge flow. The total discharge flow is the sum of fan flow and entrained dilution airflow. The key requirement to AMCA 260 is the AMCA Accredited variable resistance box. This box allows the fan to be discharged into the air chamber ( $P_s = 0$  in. wg to simulate discharging the fan to atmosphere) at all points along its fan curve.

Without the variable resistance box, the entrained dilution airflow can only be measured at the free air point of its fan curve. The entrained dilution airflow obtained can be used to calculate an effective plume height. Therefore, AMCA 260 certification is necessary to ensure the laboratory exhaust fan specified is providing the plume rise and entrainment submitted.

## ANSI/AMCA 210 Figure 15 Test

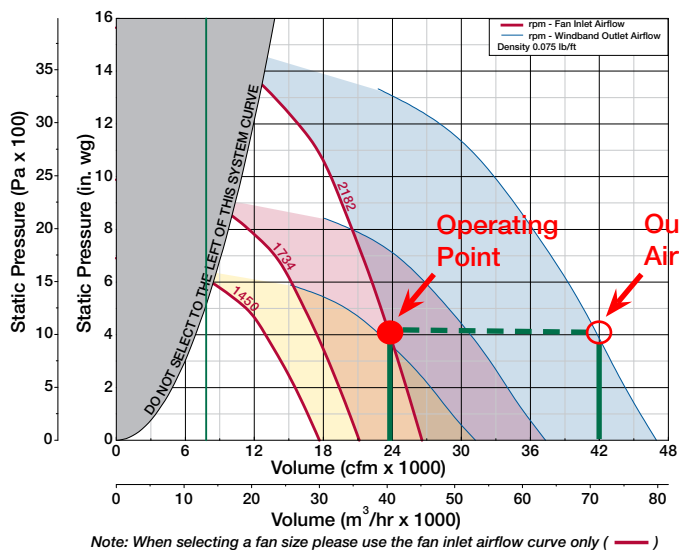


## AMCA 260 Figure 1 Test



# AMCA 260 Air Test Procedure cont'd

The entrainment ratio can be determined by dividing the outlet airflow from the AMCA 260 Figure 1 test, by the inlet airflow from the AMCA 210 Figure 15 test.



$$\text{Entrainment Ratio} = \frac{\text{Outlet Airflow}}{\text{Inlet Airflow}} \quad \text{or} \quad \left( \frac{\text{Figure 1 test}}{\text{Figure 15 test}} \right)$$

$$\text{Entrainment Ratio} = \frac{42,000 \text{ cfm}}{24,000 \text{ cfm}} = 175 \%$$

# AMCA 300 Sound Test Procedure

Greenheck is the first company in the laboratory exhaust fan industry to receive AMCA 260 certification and is also leading the industry when it comes to sound testing. Greenheck tests the outlet sound of the fan with the entire fan located inside the reverberant room according to AMCA 300 Figure 3 below.

Inlet

Outlet

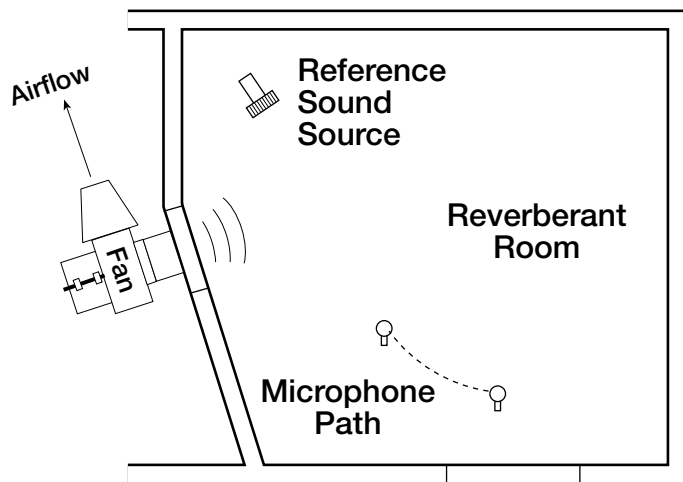


Figure 2: Fan Inlet Testing  
(Installation Type A: Free Inlet, Free Outlet)

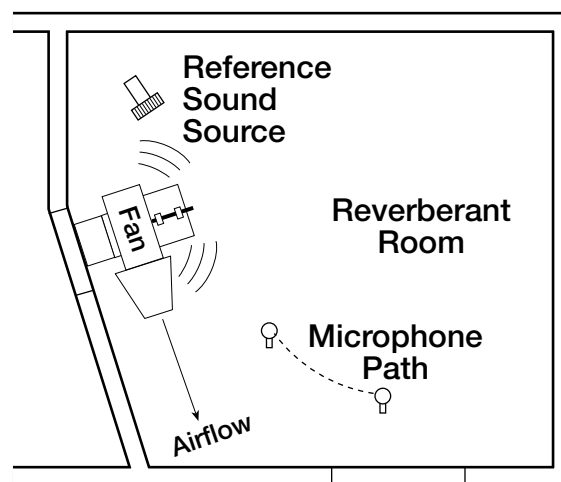


Figure 3: Fan Outlet Testing  
(Installation Type A: Free Inlet, Free Outlet)

All of our Vektor-CD high plume dilution blowers have been tested in our AMCA Accredited sound laboratory and their performance as cataloged is assured.

# How to Calculate Sound Performance

Once a Vektor-CD fan has been selected that meets performance specifications, use the following procedure to attain sound data for the specific fan rpm and percent Wide Open Volume (%WOV). Interpolation will be used to determine the eight sound power levels, the total sound power (LwA) and sound pressure (dBA) rating.

From the fan selection example on the AMCA 260 Air Test Procedure pages, the Vektor-CD Size 30, High Velocity Nozzle is operating at 1,600 rpm and 68% WOv. Viewing the Size 30 Sound Power Table, interpolation between 60 and 80% WOv is needed to find values for 68% WOv.

## Example of Sound Performance:

### Vektor-CD Size 30 (HV Nozzle)

| Sound Power by Octave Band |      |     |     |     |     |    |    |    |    |     |     |                    |     |     |     |     |     |    |    |     |     |
|----------------------------|------|-----|-----|-----|-----|----|----|----|----|-----|-----|--------------------|-----|-----|-----|-----|-----|----|----|-----|-----|
| Inlet Sound Power          |      |     |     |     |     |    |    |    |    |     |     | Outlet Sound Power |     |     |     |     |     |    |    |     |     |
| rpm                        | %WOV | 1   | 2   | 3   | 4   | 5  | 6  | 7  | 8  | LwA | dBA | 1                  | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA |
| 1600                       | 100  | 96  | 98  | 102 | 95  | 91 | 88 | 81 | 75 | 98  | 86  | 101                | 101 | 104 | 99  | 97  | 90  | 85 | 78 | 102 | 90  |
| 1600                       | 80   | 98  | 96  | 101 | 93  | 89 | 85 | 79 | 74 | 96  | 85  | 98                 | 98  | 103 | 95  | 93  | 87  | 82 | 75 | 99  | 87  |
| 1600                       | 60   | 104 | 104 | 100 | 93  | 87 | 84 | 78 | 73 | 96  | 85  | 103                | 104 | 101 | 94  | 91  | 85  | 80 | 75 | 97  | 86  |
| 1600                       | 50   | 107 | 107 | 101 | 95  | 89 | 85 | 79 | 74 | 98  | 86  | 106                | 109 | 102 | 95  | 93  | 86  | 81 | 75 | 99  | 88  |
| 1600                       | 40   | 110 | 108 | 102 | 95  | 89 | 86 | 79 | 74 | 99  | 87  | 109                | 113 | 102 | 96  | 93  | 87  | 82 | 79 | 101 | 90  |
| 2182                       | 100  | 104 | 105 | 110 | 106 | 99 | 97 | 91 | 84 | 107 | 96  | 110                | 109 | 112 | 109 | 105 | 100 | 94 | 88 | 111 | 99  |
| 2182                       | 80   | 107 | 104 | 109 | 104 | 97 | 94 | 88 | 83 | 105 | 94  | 107                | 106 | 111 | 106 | 101 | 96  | 91 | 85 | 108 | 96  |
| 2182                       | 60   | 112 | 112 | 111 | 103 | 96 | 92 | 87 | 82 | 106 | 94  | 111                | 113 | 110 | 104 | 99  | 94  | 89 | 84 | 107 | 95  |
| 2182                       | 50   | 114 | 116 | 113 | 104 | 97 | 94 | 88 | 82 | 108 | 96  | 114                | 118 | 112 | 105 | 100 | 96  | 90 | 85 | 109 | 97  |
| 2182                       | 40   | 117 | 118 | 114 | 104 | 97 | 94 | 89 | 83 | 109 | 97  | 116                | 122 | 113 | 107 | 101 | 97  | 90 | 86 | 111 | 99  |

Example

Interpolate the sound data at 1600 rpm between 80% and 60% WOv to find 68% WOv for each octave band.

#### 1st Octave Inlet Sound

$$1600 \text{ rpm @ } 68\% \text{ WOv, dB} = \left[ 98 \text{ dB} - \left\{ \left( \frac{80\% - 68\%}{80\% - 60\%} \right) \times (98 \text{ dB} - 104 \text{ dB}) \right\} \right] = 102 \text{ dB}$$

#### 2nd Octave Inlet Sound

$$1600 \text{ rpm @ } 68\% \text{ WOv, dB} = \left[ 96 \text{ dB} - \left\{ \left( \frac{80\% - 68\%}{80\% - 60\%} \right) \times (96 \text{ dB} - 104 \text{ dB}) \right\} \right] = 101 \text{ dB}$$

The same procedure should be followed to calculate the remaining inlet and outlet sound values. If the fan selection results in a fan RPM not shown, sound power levels are calculated at the next RPM above and below the operating RPM, then interpolated to the operating RPM.

Results for above example are as follows:

| Sound Power by Octave Band |      |     |     |     |    |    |    |    |    |     |     |                    |     |     |    |    |    |    |    |     |     |
|----------------------------|------|-----|-----|-----|----|----|----|----|----|-----|-----|--------------------|-----|-----|----|----|----|----|----|-----|-----|
| Inlet Sound Power          |      |     |     |     |    |    |    |    |    |     |     | Outlet Sound Power |     |     |    |    |    |    |    |     |     |
| rpm                        | %WOV | 1   | 2   | 3   | 4  | 5  | 6  | 7  | 8  | LwA | dBA | 1                  | 2   | 3   | 4  | 5  | 6  | 7  | 8  | LwA | dBA |
| 1600                       | 68   | 102 | 101 | 100 | 93 | 88 | 84 | 78 | 73 | 96  | 85  | 101                | 102 | 102 | 94 | 92 | 86 | 81 | 75 | 98  | 86  |

SOUND DATA

# Plume Height

It is important that the exhaust plume height be great enough to avoid re-entrainment of exhaust air and to disperse the exhaust. The effective plume height should be used when analyzing design issues. The effective plume height of a fume exhaust system ( $h_e$ ) is the physical height of the fan system ( $h_s$ ) plus the plume rise ( $h_r$ ), found from the equation below. Standard Vektor-CD fan heights can be found under the dimensions section of this catalog.

The effective plume rise can be calculated using the following equation\*:

$$h_e = h_r + h_s$$

$$h_e = [3.0 \times (V \times d / U)] + h_s$$

$h_s$  = fan height (dimensions section of this catalog)

$h_r$  = plume rise, ft (m)

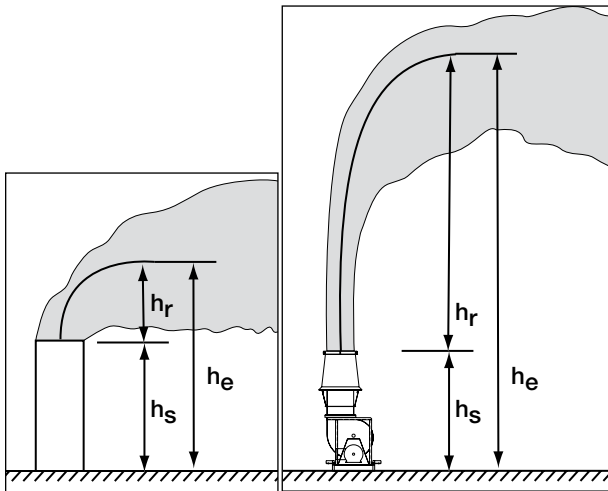
$V$  = windband exit velocity, fpm (m/s)

$d$  = windband diameter, ft (m)

$U$  = wind speed, fpm (m/s)\*\*

\* From ASHRAE Laboratory Design Guide, Equation 9-2

\*\* Plume Rises shown on performance pages calculated with a 10 mph (16 km/h) crosswind.



Note: Graphical comparison of Vektor-CD to low velocity, traditional stack.

| Quick Select Chart |                     |         |                            |     |      |
|--------------------|---------------------|---------|----------------------------|-----|------|
| Fan Size           | Laboratory Effluent |         | Effective Plume Rise $h_e$ |     |      |
|                    |                     | cfm     | m <sup>3</sup> /h          | ft. | m    |
| 12                 | Min                 | 500     | 850                        | 13  | 3.9  |
|                    | Max                 | 5,000   | 8,500                      | 30  | 9.1  |
| 15                 | Min                 | 800     | 1,400                      | 13  | 4.1  |
|                    | Max                 | 8,700   | 14,800                     | 34  | 10.4 |
| 18                 | Min                 | 1,200   | 2,000                      | 14  | 4.3  |
|                    | Max                 | 10,800  | 18,300                     | 39  | 12.0 |
| 22                 | Min                 | 1,800   | 3,100                      | 15  | 4.6  |
|                    | Max                 | 16,200  | 27,500                     | 46  | 14.0 |
| 24                 | Min                 | 2,500   | 4,200                      | 17  | 5.0  |
|                    | Max                 | 20,400  | 34,700                     | 50  | 15.1 |
| 27                 | Min                 | 3,500   | 5,900                      | 19  | 5.8  |
|                    | Max                 | 25,000  | 42,500                     | 55  | 16.6 |
| 30                 | Min                 | 4,200   | 7,100                      | 21  | 6.4  |
|                    | Max                 | 29,000  | 49,300                     | 60  | 18.4 |
| 33                 | Min                 | 5,000   | 8,500                      | 23  | 6.9  |
|                    | Max                 | 35,000  | 60,300                     | 66  | 20.2 |
| 36                 | Min                 | 5,500   | 9,300                      | 24  | 7.3  |
|                    | Max                 | 44,000  | 74,800                     | 73  | 22.4 |
| 40                 | Min                 | 6,000   | 10,200                     | 25  | 7.7  |
|                    | Max                 | 53,000  | 90,000                     | 81  | 24.6 |
| 44                 | Min                 | 7,500   | 12,700                     | 28  | 8.6  |
|                    | Max                 | 65,000  | 110,400                    | 89  | 27.2 |
| 49                 | Min                 | 9,000   | 15,300                     | 31  | 9.3  |
|                    | Max                 | 77,000  | 130,800                    | 98  | 29.9 |
| 54                 | Min                 | 12,000  | 20,400                     | 35  | 10.6 |
|                    | Max                 | 95,000  | 161,400                    | 108 | 33.0 |
| 60                 | Min                 | 16,000  | 27,200                     | 41  | 12.4 |
|                    | Max                 | 115,000 | 195,400                    | 110 | 33.4 |
| 66                 | Min                 | 20,000  | 34,000                     | 47  | 14.3 |
|                    | Max                 | 140,000 | 237,900                    | 111 | 33.8 |

Note: Plume rise ranges shown above are based on 3,000 fpm (15.25 m/s) minimum discharge velocity per ANSI Z9.5 with a 10 mph (16.09 km/hr) crosswind per ASHRAE Applications Handbook.

Note: When manually selecting a fan it is important to remember that more than one fan is available to meet the desired performance. Selection criteria such as fan size, efficiency, speed, outlet velocity, horsepower, sound, or construction material may also dictate which fan is chosen.

## Adjusting Plume Height

Adjusting the fan system to have additional throw or plume height is achieved by increasing the volume of air through the discharge nozzle. Simply changing the drive pulleys will increase fan speed and volume capacity, thus boosting flow momentum. The additional air through the fan comes from an increase in lab exhaust or an increase of air through a bypass air damper. Utilizing a bypass air damper to increase both dilution and mass flow of the exhaust air can optimize plume rise. Increased mass flow improves momentum and carries the diluted exhaust higher.

The plume height can also be adjusted by changing nozzles. A higher velocity nozzle results in higher outlet airflow, which in turn results in higher plume rise.

# Vektor-CD Selection: Fan Curves

Every laboratory or fume exhaust application has a unique set of criteria that must be evaluated in order to determine the most effective exhaust system. The selection of a Vektor-CD requires the total lab exhaust volume (effluent) per fan along with a determination of the external static pressure. Other considerations when making fan selections include: sound requirements, electrical limitations, size constraints, and the effective plume rise.

## 1) Determine the laboratory exhaust requirements

- Determine the total lab exhaust volume (effluent) per fan.
- Determine the external static pressure entering the fan system.

### Bypass Air Plenums - Estimated Pressure Drop

- Variable volume lab exhaust systems and systems adding dilution air require a bypass air plenum and damper.
- Greenheck's computer aided product selection software (CAPS), automatically adds external system static pressure to account for the bypass air plenum and isolation damper.

## 2) Select the appropriate Vektor-CD

- A** Select Vektor-CD fans with a minimum nozzle velocity of 3,000 feet per minute (ANSI Z9.5 and ASHRAE lab design guidelines), which is represented by the green vertical line in Figure 1.
- All Vektor-CD curves indicate the minimum cfm necessary to meet this minimum velocity.

## 3) Determine fan rpm

- Locate the fan operating point (the intersection of the required airflow and static pressure) on the performance curve in Figure 1.
- B** In this example, the operating point is 17,000 cfm at 4 in. wg.
- The belt drive fan rpm can be estimated by comparing the operating point to any of the solid fan rpm curves and in this example, the operating point falls on the red 1734 rpm curve.
- C** Direct drive fan selections must use the 50 or 60 cycle rpm curves (yellow or blue curves).
- Determine the brake horsepower by comparing the operating point to the dashed brake horsepower curves.

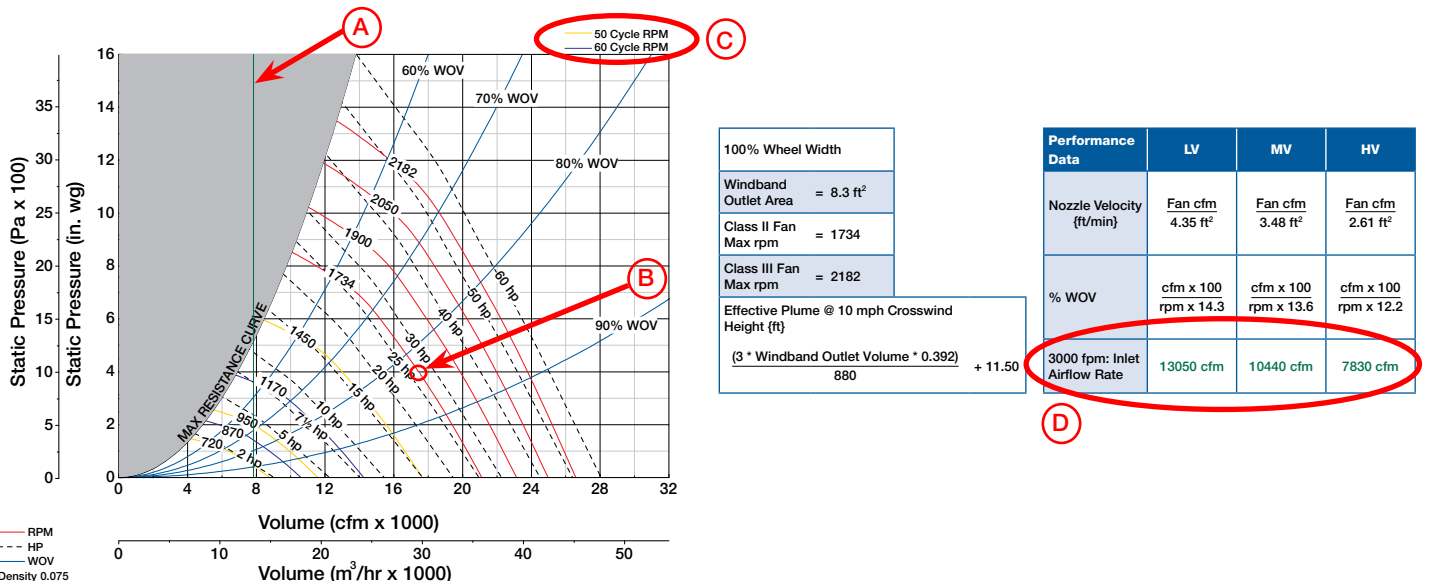
In this example, the brake horsepower is above 20, but slightly less than 30 hp. A minimum of a 30 hp motor is recommended for this selection.

## 4) LV, MV and HV Nozzles

- D** Each fan size is available with Low Velocity (LV), Medium Velocity (MV), or High Velocity (HV) nozzles.
- Multiple nozzles (VNT) allow for the optimization of brake horsepower, plume rise and acoustic performance.

Note: For most applications, the LV or MV nozzles are recommended in order to limit the operating brake horsepower. HV nozzles are available for applications that require the highest plume rise.

Figure 1: Vektor-CD Size 30 High Velocity





# Vektor-CD Selection: AMCA 260 (Induced Air) Curves

Figure 2 below illustrates the new AMCA 260 fan curves. Each fan has two performance curves associated with each rpm: the red curve is the flow through the fan and the blue curve directly to the right is the windband exit volume. These curves have been connected with shading.

## 1) Determining windband exit volume

- Find the operating point **(E)**. Draw a horizontal line to the right from **(E)** to the blue windband exit curve **(F)**.
- The windband exit volume is determined by **(F)**, so the windband exit volume is 31,000 cfm.

## 2) Determining windband velocity, dilution ratio and effective plume rise

Each Vektor-CD size and nozzle combination has a unique set of equations to determine the nozzle velocity, dilution ratio, and effective plume height. Since the operating point is 17,000 cfm at 4 in. wg, calculations are as follows for a Vektor-CD Size 30-HV.

- (F)** Windband Exit Volume = 31,000 cfm
- (G)** Nozzle Velocity =  $17,000 \text{ cfm} / 2.61 \text{ ft}^2 = 6513 \text{ ft/min}$   
Dilution Ratio = Windband Exit Volume/Fan Inlet Airflow =  $31,000 \text{ cfm} / 17,000 \text{ cfm} = 182\%$
- (H)** Effective Plume Height =  $[(3 * 31,000 * 0.392) / 880] + 11.6 \text{ ft} = 53 \text{ ft}$

*Note: Effective Plume Height includes the fan height of 11.6 ft as indicated in the dimensions section of this catalog.*

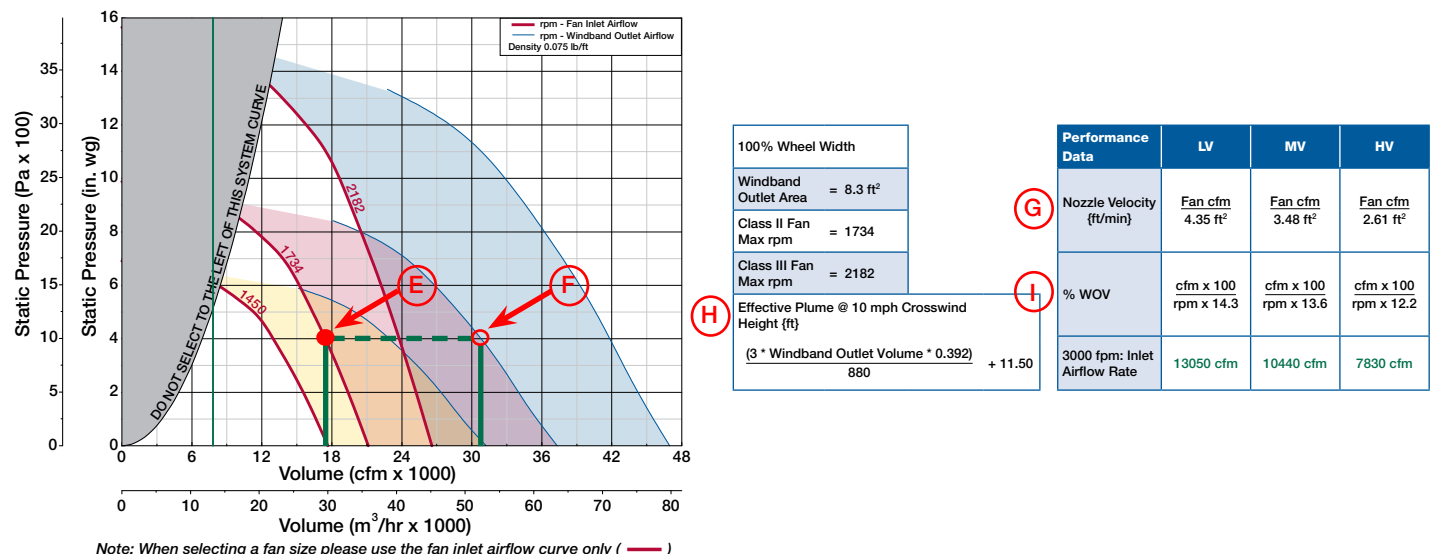
## Determining Inlet and Outlet Sound

Along with the fan rpm, it is necessary to know the fan percent Wide Open Volume (%WOV). The %WOV can be calculated using the equation posted adjacent to each fan curve.

- (I)** %WOV (Vektor-CD-30-HV) =  $(\text{cfm} \times 100) / (\text{rpm} \times 12.2)$ . For this example, the %WOV is 81%.

The sound power and sound pressure can be determined through linear interpolation between sound data provided at 1600 rpm and 2182 rpm.

**Figure 2: Vektor-CD Size 30 High Velocity**



| Air Temp. °F | Elevation (Feet Above Sea Level) |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |
|--------------|----------------------------------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
|              | 0                                | 1000 | 2000 | 3000 | 4000 | 5000 | 6000 | 7000 | 8000 | 9000 | 10000 | 11000 | 12000 | 13000 | 14000 | 15000 |
| -20          | 0.83                             | 0.86 | 0.89 | 0.93 | 0.96 | 1.00 | 1.03 | 1.07 | 1.11 | 1.15 | 1.19  | 1.24  | 1.28  | 1.33  | 1.38  | 1.43  |
| -10          | 0.85                             | 0.88 | 0.91 | 0.95 | 0.98 | 1.02 | 1.06 | 1.09 | 1.14 | 1.18 | 1.22  | 1.27  | 1.31  | 1.36  | 1.41  | 1.46  |
| 0            | 0.87                             | 0.90 | 0.93 | 0.97 | 1.00 | 1.04 | 1.08 | 1.12 | 1.16 | 1.20 | 1.25  | 1.29  | 1.34  | 1.39  | 1.44  | 1.50  |
| 10           | 0.89                             | 0.92 | 0.95 | 0.99 | 1.03 | 1.06 | 1.10 | 1.14 | 1.19 | 1.23 | 1.28  | 1.32  | 1.37  | 1.42  | 1.47  | 1.53  |
| 32           | 0.93                             | 0.96 | 1.00 | 1.04 | 1.07 | 1.11 | 1.15 | 1.20 | 1.24 | 1.29 | 1.33  | 1.38  | 1.44  | 1.49  | 1.54  | 1.60  |
| 50           | 0.96                             | 1.00 | 1.03 | 1.07 | 1.11 | 1.15 | 1.20 | 1.24 | 1.29 | 1.33 | 1.38  | 1.44  | 1.49  | 1.54  | 1.60  | 1.66  |
| 70           | 1.00                             | 1.04 | 1.08 | 1.12 | 1.16 | 1.20 | 1.24 | 1.29 | 1.34 | 1.39 | 1.44  | 1.49  | 1.55  | 1.60  | 1.66  | 1.72  |
| 100          | 1.06                             | 1.10 | 1.14 | 1.18 | 1.22 | 1.27 | 1.31 | 1.36 | 1.41 | 1.47 | 1.52  | 1.58  | 1.63  | 1.69  | 1.76  | 1.82  |
| 125          | 1.10                             | 1.14 | 1.19 | 1.23 | 1.28 | 1.32 | 1.37 | 1.42 | 1.48 | 1.53 | 1.59  | 1.65  | 1.71  | 1.77  | 1.84  | 1.90  |
| 150          | 1.15                             | 1.19 | 1.24 | 1.28 | 1.33 | 1.38 | 1.43 | 1.48 | 1.54 | 1.60 | 1.66  | 1.72  | 1.78  | 1.85  | 1.91  | 1.98  |
| 175          | 1.20                             | 1.24 | 1.29 | 1.34 | 1.39 | 1.44 | 1.49 | 1.55 | 1.60 | 1.66 | 1.72  | 1.79  | 1.85  | 1.92  | 1.99  | 2.07  |
| 200          | 1.25                             | 1.29 | 1.34 | 1.39 | 1.44 | 1.49 | 1.55 | 1.61 | 1.67 | 1.73 | 1.79  | 1.86  | 1.93  | 2.00  | 2.07  | 2.15  |

### Density Correction Factor Equation

$$DCF = ((T + 460)/530) \times 1.037(E / 1000)$$

DCF = Density Correction Factor

T = Temperature (degrees F)

E = Elevation above sea level (feet)

$$\text{Air Density (lb/ft}^3\text{)} = 0.075 / DCF$$

## Effects of Air Density

When selecting a fan to operate at a non-standard air density using standard air density tables and curves, corrections must be made to static pressure and brake horsepower.

At higher than standard elevations and temperatures, air density will be lower than standard. Therefore, static pressure must be determined at standard density that will equate to the specified static pressure at the operating density. Since standard air density is greater than operating air density in this instance, one would expect the corrected static pressure to be greater than the operating static pressure.

*The following example shows how to select a Vektor-CD Size 30, High Velocity (HV) Nozzle for 17,000 cfm, 4 in. wg, 8000 ft. elevation, and 125°F temperature.*

1. Since the volume exhausted by the system is not affected by density, cfm remains 17,000.
2. Select the correction factor from the chart for 8000 ft. elevation and 125°F. Correction factor is 1.48.
3. Multiply specified static pressure (4 in. wg) by the correction factor (1.48) to determine standard air density equivalent static pressure. {4 in. wg x 1.48 = 5.92 in. wg}
4. Using the performance tables, enter with 5.92 in. wg static pressure and 17,000 cfm.
5. At the intersection of 5.92 in. wg static pressure and 17,000 cfm, the fan rpm is approximately 1820 rpm.
6. Since the horsepower selected refers to standard air density, this must be corrected to reflect actual Bhp at the lighter operating air. Remember, horsepower is less at a lower air density. Divide the Bhp required (31) by the correction factor (1.48) selected previously to determine the Bhp at the new operating conditions.  
31/1.48 = 20.9 Bhp. This would require a minimum motor size of 25 hp.

Size 12

Size 15

Size 18

Size 22

Size 24

Size 27

Size 30

Size 33

Size 36

Size 40

Size 44

Size 49

Size 54

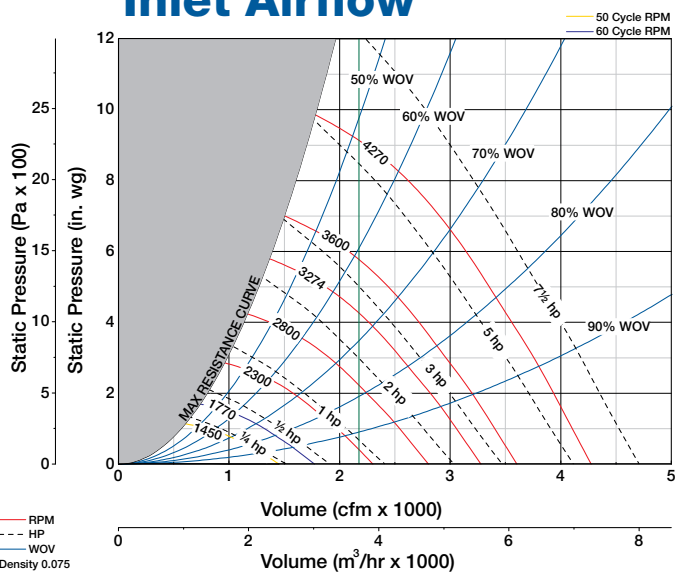
Size 60

Size 66

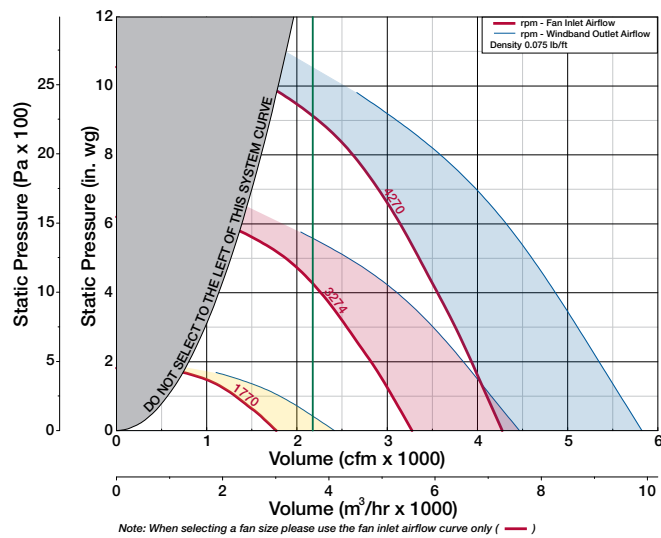
# **VEKTOR™ Performance**

# Vektor-CD Size 12

## Inlet Airflow



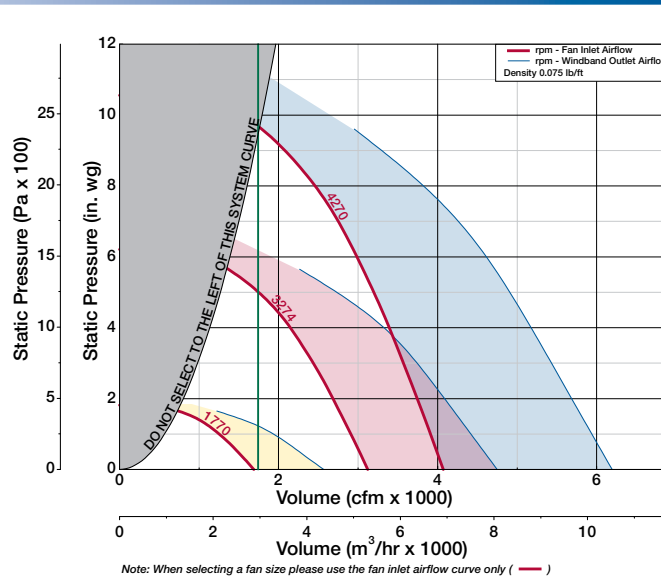
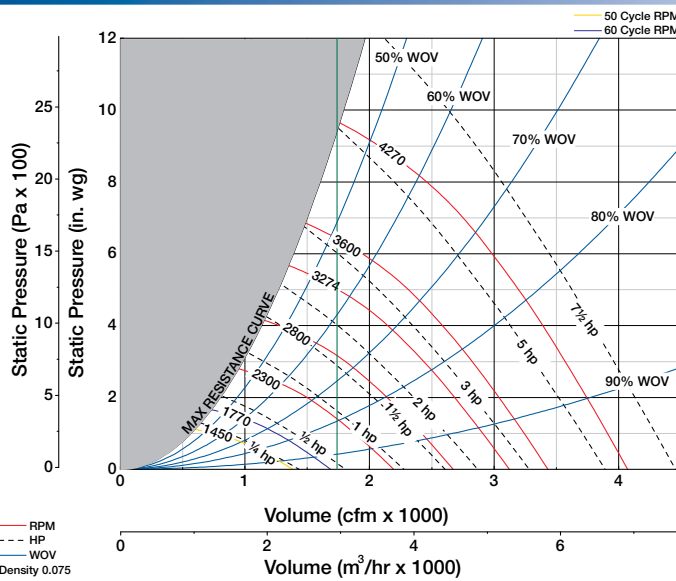
## Outlet Airflow



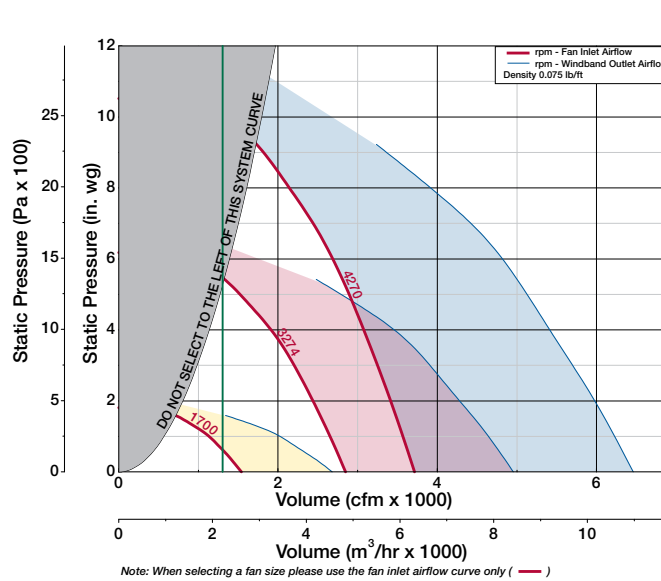
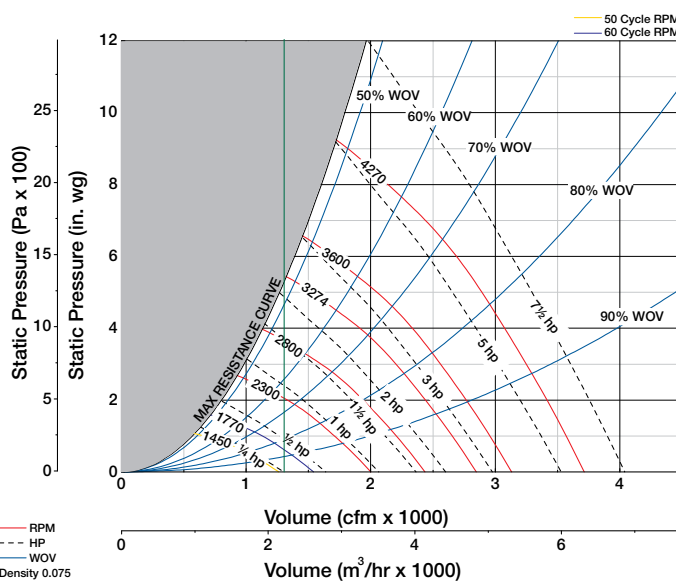
**AIR DATA**

**LV**  
Low Velocity

**MV**  
Medium Velocity



**HV**  
High Velocity



Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).

# Vektor-CD Size 12

AIR DATA

|  |
|--|
| 100% Wheel Width   |
| Windband Outlet Area = 1.38 ft <sup>2</sup>                      |
| Class II Fan Max rpm = 4270                                      |
| Class III Fan Max rpm = 4270                                     |
| Effective Plume @ 10 mph Crosswind Height {ft}                   |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.961)}{880} + 6.00$ |

| Performance Data             | LV                              | MV                              | HV                              |
|------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Nozzle Velocity {ft/min}     | Fan cfm<br>0.73 ft <sup>2</sup> | Fan cfm<br>0.58 ft <sup>2</sup> | Fan cfm<br>0.44 ft <sup>2</sup> |
| % WOV                        | cfm x 100<br>rpm x 0.99         | cfm x 100<br>rpm x 0.95         | cfm x 100<br>rpm x 0.86         |
| 3000 fpm: Inlet Airflow Rate | 2175 cfm                        | 1740 cfm                        | 1305 cfm                        |

## Vektor-CD Size 12 (HV Nozzle)

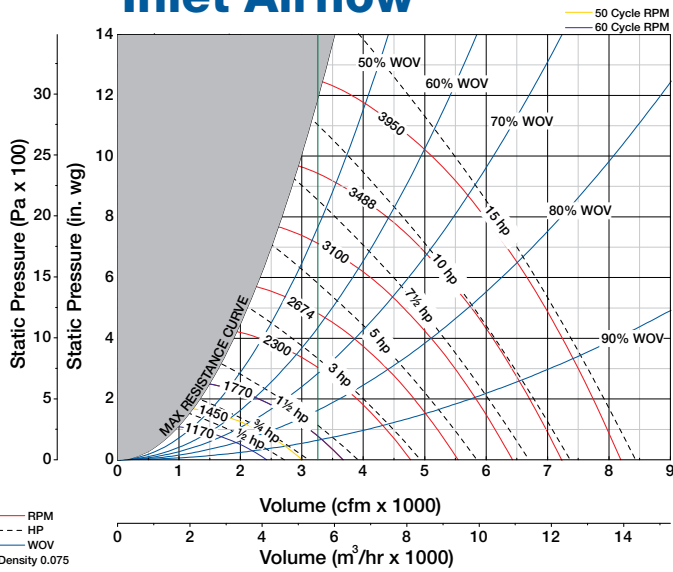
| Sound Power by Octave Band |      |                   |    |     |    |    |    |    |    |     |     |                    |    |     |     |    |    |    |    |     |     |
|----------------------------|------|-------------------|----|-----|----|----|----|----|----|-----|-----|--------------------|----|-----|-----|----|----|----|----|-----|-----|
|                            |      | Inlet Sound Power |    |     |    |    |    |    |    |     |     | Outlet Sound Power |    |     |     |    |    |    |    |     |     |
| rpm                        | %WOV | 1                 | 2  | 3   | 4  | 5  | 6  | 7  | 8  | LwA | dBA | 1                  | 2  | 3   | 4   | 5  | 6  | 7  | 8  | LwA | dBA |
| 1300                       | 100  | 78                | 76 | 82  | 67 | 63 | 61 | 52 | 42 | 75  | 63  | 68                 | 81 | 78  | 72  | 68 | 66 | 58 | 49 | 75  | 64  |
| 1300                       | 80   | 77                | 74 | 78  | 65 | 60 | 56 | 49 | 40 | 71  | 60  | 67                 | 81 | 76  | 71  | 67 | 65 | 58 | 49 | 74  | 63  |
| 1300                       | 60   | 77                | 73 | 77  | 64 | 58 | 54 | 49 | 40 | 70  | 59  | 69                 | 82 | 75  | 71  | 67 | 64 | 58 | 49 | 74  | 62  |
| 1300                       | 50   | 77                | 73 | 76  | 64 | 58 | 53 | 49 | 41 | 69  | 58  | 71                 | 81 | 75  | 71  | 67 | 65 | 58 | 49 | 74  | 62  |
| 1300                       | 40   | 78                | 76 | 77  | 65 | 59 | 54 | 49 | 41 | 70  | 59  | 72                 | 82 | 76  | 71  | 67 | 65 | 58 | 49 | 74  | 63  |
| 1800                       | 100  | 86                | 84 | 86  | 76 | 71 | 68 | 63 | 53 | 80  | 69  | 75                 | 85 | 86  | 79  | 74 | 72 | 66 | 57 | 82  | 70  |
| 1800                       | 80   | 84                | 81 | 83  | 74 | 68 | 65 | 59 | 51 | 78  | 66  | 74                 | 86 | 83  | 77  | 72 | 70 | 64 | 56 | 80  | 68  |
| 1800                       | 60   | 84                | 81 | 83  | 72 | 67 | 62 | 57 | 51 | 77  | 65  | 74                 | 85 | 82  | 77  | 72 | 69 | 64 | 56 | 79  | 68  |
| 1800                       | 50   | 85                | 82 | 83  | 72 | 67 | 62 | 57 | 51 | 77  | 65  | 76                 | 85 | 83  | 77  | 72 | 69 | 64 | 57 | 80  | 68  |
| 1800                       | 40   | 84                | 83 | 84  | 73 | 68 | 62 | 57 | 52 | 78  | 66  | 77                 | 85 | 83  | 77  | 73 | 69 | 64 | 57 | 80  | 68  |
| 2400                       | 100  | 87                | 88 | 91  | 85 | 79 | 74 | 72 | 62 | 87  | 75  | 81                 | 87 | 93  | 89  | 85 | 78 | 73 | 64 | 90  | 79  |
| 2400                       | 80   | 89                | 88 | 90  | 82 | 77 | 71 | 68 | 59 | 85  | 73  | 79                 | 86 | 91  | 87  | 83 | 76 | 70 | 63 | 88  | 77  |
| 2400                       | 60   | 91                | 88 | 89  | 80 | 75 | 69 | 65 | 59 | 84  | 72  | 81                 | 87 | 91  | 86  | 83 | 74 | 69 | 63 | 88  | 77  |
| 2400                       | 50   | 91                | 89 | 89  | 80 | 75 | 69 | 65 | 59 | 84  | 72  | 81                 | 88 | 92  | 86  | 83 | 75 | 69 | 63 | 88  | 77  |
| 2400                       | 40   | 91                | 91 | 91  | 81 | 76 | 70 | 66 | 60 | 85  | 74  | 81                 | 89 | 93  | 86  | 84 | 75 | 69 | 63 | 89  | 78  |
| 3200                       | 100  | 94                | 88 | 91  | 93 | 86 | 82 | 81 | 74 | 93  | 81  | 85                 | 90 | 93  | 93  | 88 | 85 | 81 | 74 | 94  | 83  |
| 3200                       | 80   | 91                | 88 | 89  | 90 | 83 | 78 | 77 | 69 | 90  | 78  | 84                 | 90 | 91  | 91  | 86 | 82 | 77 | 69 | 92  | 80  |
| 3200                       | 60   | 90                | 89 | 89  | 88 | 81 | 77 | 74 | 68 | 88  | 77  | 84                 | 88 | 91  | 90  | 85 | 80 | 75 | 68 | 91  | 79  |
| 3200                       | 50   | 93                | 90 | 90  | 88 | 81 | 77 | 74 | 68 | 89  | 77  | 85                 | 89 | 92  | 90  | 85 | 80 | 75 | 68 | 91  | 79  |
| 3200                       | 40   | 95                | 92 | 95  | 90 | 83 | 79 | 75 | 70 | 91  | 80  | 85                 | 90 | 95  | 90  | 85 | 82 | 76 | 69 | 92  | 80  |
| 4300                       | 100  | 98                | 96 | 97  | 99 | 96 | 89 | 89 | 85 | 100 | 89  | 91                 | 95 | 99  | 101 | 98 | 93 | 89 | 85 | 102 | 91  |
| 4300                       | 80   | 96                | 95 | 95  | 96 | 93 | 86 | 85 | 80 | 97  | 86  | 88                 | 94 | 97  | 97  | 95 | 91 | 86 | 80 | 99  | 88  |
| 4300                       | 60   | 95                | 96 | 97  | 94 | 90 | 84 | 82 | 77 | 96  | 84  | 89                 | 93 | 98  | 96  | 93 | 89 | 83 | 78 | 98  | 86  |
| 4300                       | 50   | 95                | 97 | 99  | 95 | 90 | 84 | 82 | 77 | 96  | 85  | 89                 | 94 | 100 | 97  | 93 | 89 | 84 | 78 | 99  | 87  |
| 4300                       | 40   | 96                | 98 | 102 | 98 | 93 | 86 | 84 | 78 | 99  | 88  | 90                 | 95 | 102 | 99  | 95 | 90 | 85 | 78 | 100 | 89  |

SOUND DATA

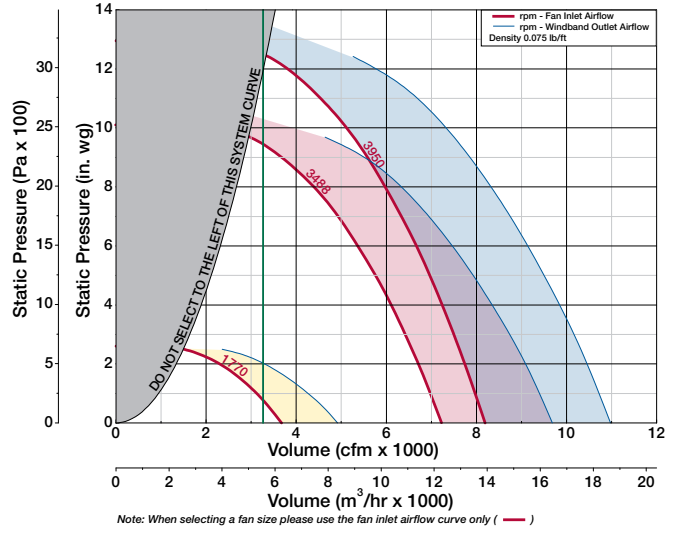
The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

# Vektor-CD Size 15

## Inlet Airflow



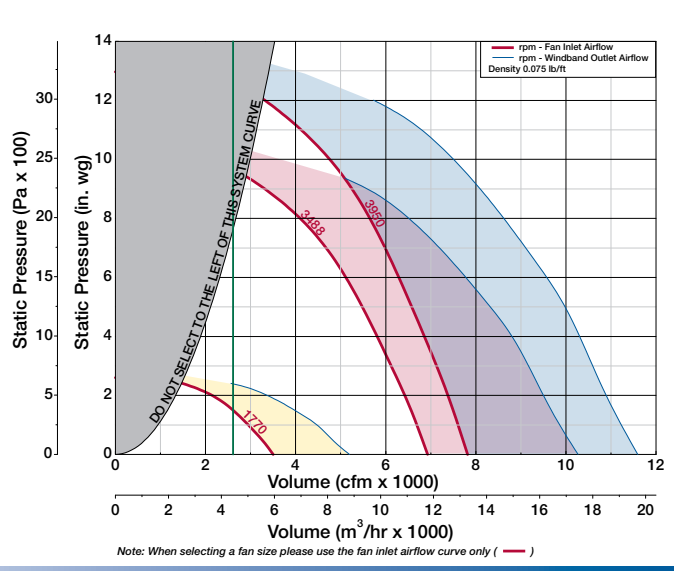
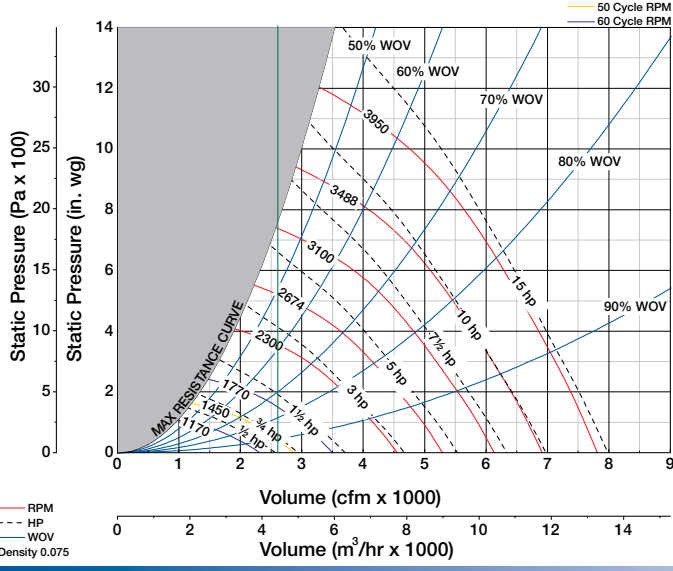
## Outlet Airflow



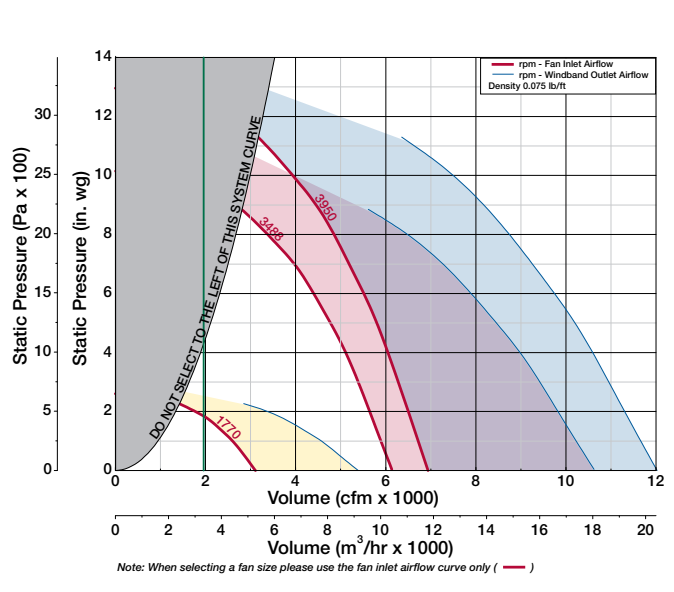
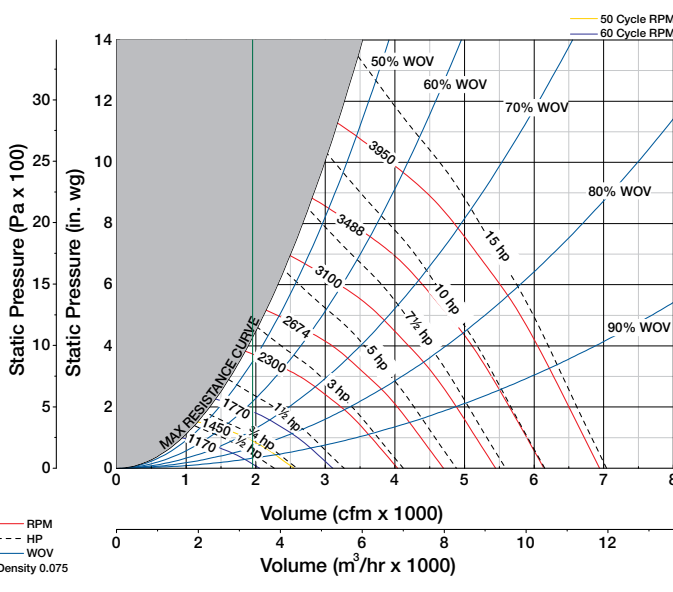
**AIR DATA**

**LV**  
Low Velocity

**MV**  
Medium Velocity



**HV**  
High Velocity



Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).

|  |
|--|
| 100% Wheel Width   |
| Windband Outlet Area = 2.07 ft <sup>2</sup>                      |
| Class II Fan Max rpm = 3488                                      |
| Class III Fan Max rpm = 3950                                     |
| Effective Plume @ 10 mph Crosswind Height {ft}                   |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.784)}{880} + 6.83$ |

| Performance Data             | LV                              | MV                              | HV                              |
|------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Nozzle Velocity {ft/min}     | Fan cfm<br>1.09 ft <sup>2</sup> | Fan cfm<br>0.87 ft <sup>2</sup> | Fan cfm<br>0.65 ft <sup>2</sup> |
| % WOV                        | cfm x 100<br>rpm x 2.06         | cfm x 100<br>rpm x 1.97         | cfm x 100<br>rpm x 1.75         |
| 3000 fpm: Inlet Airflow Rate | 3261 cfm                        | 2610 cfm                        | 1956 cfm                        |

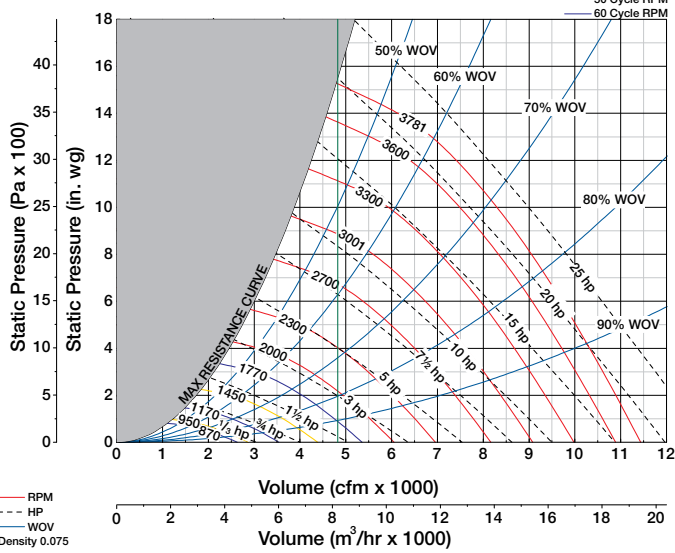
## Vektor-CD Size 15 (HV Nozzle)

| Sound Power by Octave Band |      |     |     |     |     |    |    |    |    |     |     |                    |     |     |     |    |    |    |    |     |     |
|----------------------------|------|-----|-----|-----|-----|----|----|----|----|-----|-----|--------------------|-----|-----|-----|----|----|----|----|-----|-----|
| Inlet Sound Power          |      |     |     |     |     |    |    |    |    |     |     | Outlet Sound Power |     |     |     |    |    |    |    |     |     |
| rpm                        | %WOV | 1   | 2   | 3   | 4   | 5  | 6  | 7  | 8  | LwA | dBA | 1                  | 2   | 3   | 4   | 5  | 6  | 7  | 8  | LwA | dBA |
| 1100                       | 100  | 75  | 82  | 79  | 72  | 67 | 64 | 56 | 48 | 75  | 64  | 72                 | 80  | 81  | 74  | 71 | 68 | 60 | 52 | 77  | 66  |
| 1100                       | 80   | 75  | 81  | 77  | 71  | 65 | 61 | 54 | 46 | 73  | 62  | 70                 | 80  | 79  | 73  | 69 | 66 | 59 | 53 | 76  | 64  |
| 1100                       | 60   | 73  | 79  | 76  | 69  | 61 | 60 | 54 | 46 | 72  | 60  | 69                 | 78  | 77  | 73  | 68 | 65 | 59 | 53 | 75  | 63  |
| 1100                       | 50   | 73  | 80  | 75  | 68  | 60 | 59 | 54 | 46 | 71  | 60  | 69                 | 77  | 77  | 72  | 67 | 65 | 59 | 52 | 74  | 63  |
| 1100                       | 40   | 74  | 78  | 74  | 67  | 60 | 59 | 54 | 46 | 70  | 59  | 71                 | 77  | 76  | 72  | 67 | 65 | 59 | 52 | 74  | 63  |
| 1500                       | 100  | 79  | 82  | 87  | 79  | 74 | 72 | 66 | 58 | 82  | 71  | 77                 | 81  | 91  | 79  | 77 | 75 | 68 | 60 | 85  | 74  |
| 1500                       | 80   | 77  | 81  | 85  | 77  | 72 | 69 | 64 | 56 | 80  | 69  | 76                 | 79  | 88  | 78  | 76 | 73 | 66 | 59 | 83  | 71  |
| 1500                       | 60   | 76  | 81  | 84  | 76  | 69 | 67 | 64 | 56 | 79  | 67  | 74                 | 78  | 85  | 77  | 74 | 72 | 66 | 60 | 81  | 69  |
| 1500                       | 50   | 78  | 81  | 83  | 76  | 68 | 67 | 64 | 56 | 78  | 67  | 74                 | 78  | 84  | 77  | 73 | 71 | 66 | 59 | 80  | 69  |
| 1500                       | 40   | 81  | 84  | 84  | 76  | 68 | 67 | 64 | 56 | 79  | 67  | 77                 | 80  | 84  | 77  | 73 | 71 | 66 | 60 | 80  | 69  |
| 2100                       | 100  | 87  | 86  | 87  | 87  | 80 | 80 | 76 | 68 | 88  | 76  | 84                 | 85  | 92  | 86  | 83 | 81 | 77 | 69 | 89  | 78  |
| 2100                       | 80   | 84  | 85  | 86  | 84  | 78 | 78 | 72 | 65 | 86  | 74  | 81                 | 85  | 89  | 84  | 81 | 79 | 74 | 67 | 87  | 76  |
| 2100                       | 60   | 83  | 87  | 86  | 82  | 77 | 75 | 71 | 66 | 84  | 73  | 81                 | 84  | 89  | 82  | 81 | 78 | 74 | 68 | 86  | 75  |
| 2100                       | 50   | 84  | 89  | 87  | 82  | 76 | 75 | 71 | 66 | 84  | 73  | 83                 | 85  | 90  | 82  | 81 | 77 | 73 | 68 | 87  | 75  |
| 2100                       | 40   | 87  | 89  | 89  | 82  | 76 | 75 | 71 | 66 | 85  | 73  | 84                 | 88  | 91  | 83  | 81 | 78 | 74 | 68 | 87  | 76  |
| 2900                       | 100  | 95  | 91  | 92  | 95  | 87 | 87 | 85 | 79 | 95  | 84  | 91                 | 92  | 95  | 96  | 91 | 89 | 86 | 80 | 97  | 86  |
| 2900                       | 80   | 94  | 89  | 91  | 94  | 85 | 85 | 81 | 75 | 94  | 82  | 88                 | 90  | 93  | 93  | 89 | 87 | 83 | 77 | 95  | 83  |
| 2900                       | 60   | 95  | 90  | 92  | 93  | 85 | 83 | 80 | 75 | 93  | 81  | 87                 | 89  | 93  | 91  | 88 | 86 | 81 | 77 | 94  | 82  |
| 2900                       | 50   | 95  | 91  | 93  | 92  | 84 | 82 | 79 | 75 | 92  | 81  | 88                 | 90  | 94  | 91  | 88 | 86 | 81 | 77 | 94  | 82  |
| 2900                       | 40   | 97  | 94  | 95  | 93  | 85 | 82 | 80 | 75 | 93  | 82  | 91                 | 94  | 97  | 92  | 88 | 86 | 82 | 77 | 95  | 83  |
| 3950                       | 100  | 103 | 99  | 99  | 102 | 96 | 93 | 93 | 88 | 103 | 91  | 97                 | 100 | 103 | 105 | 99 | 97 | 94 | 89 | 106 | 94  |
| 3950                       | 80   | 101 | 97  | 97  | 102 | 95 | 91 | 91 | 84 | 102 | 90  | 94                 | 97  | 100 | 102 | 96 | 95 | 92 | 86 | 103 | 91  |
| 3950                       | 60   | 101 | 98  | 99  | 100 | 93 | 90 | 89 | 84 | 100 | 89  | 97                 | 97  | 101 | 100 | 95 | 94 | 90 | 85 | 102 | 90  |
| 3950                       | 50   | 101 | 98  | 100 | 102 | 92 | 89 | 88 | 84 | 101 | 90  | 97                 | 97  | 102 | 100 | 95 | 94 | 90 | 85 | 102 | 90  |
| 3950                       | 40   | 103 | 102 | 102 | 102 | 94 | 90 | 89 | 84 | 102 | 90  | 97                 | 99  | 104 | 101 | 96 | 95 | 90 | 85 | 103 | 91  |

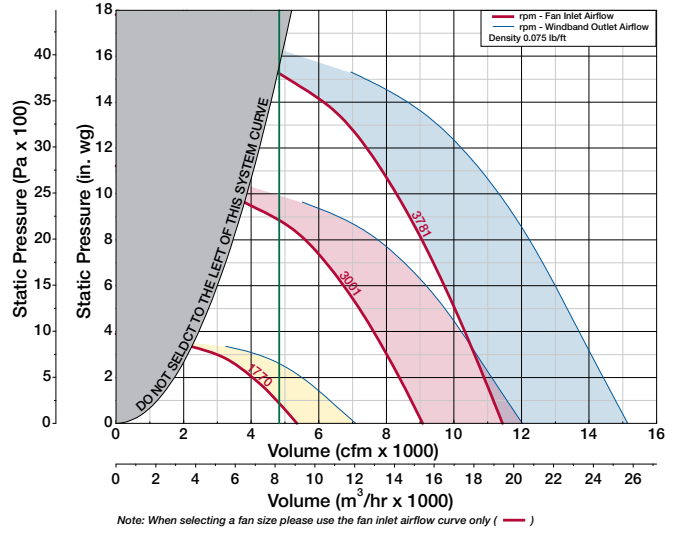
The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

# Vektor-CD Size 18

## Inlet Airflow



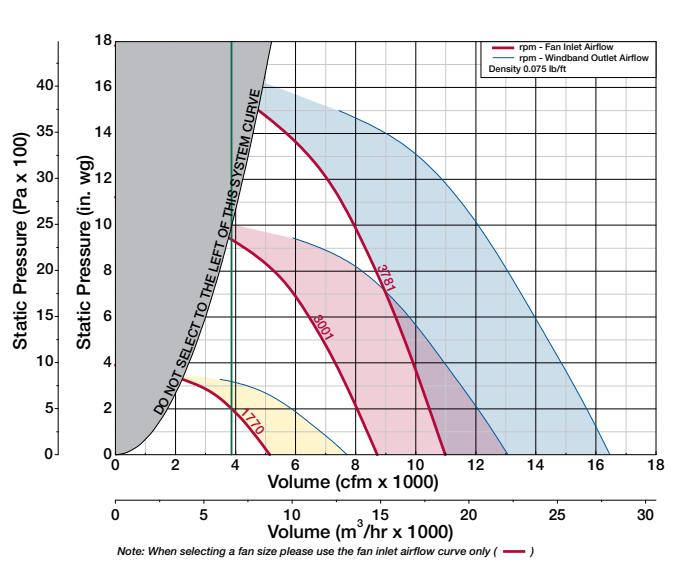
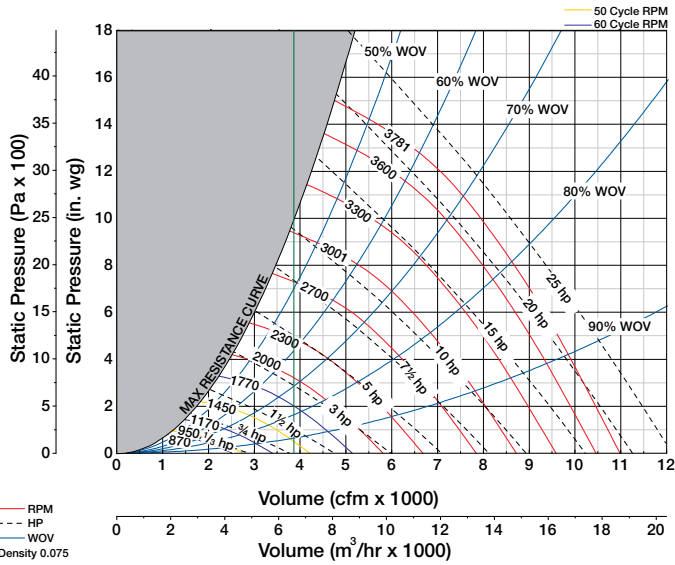
## Outlet Airflow



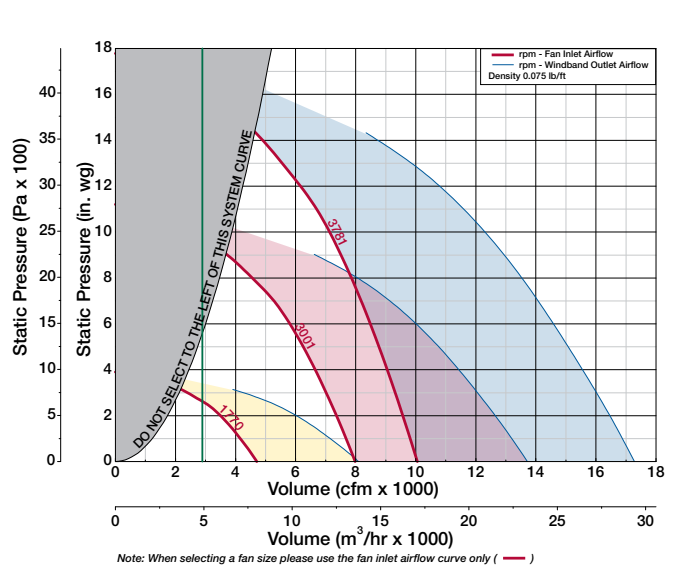
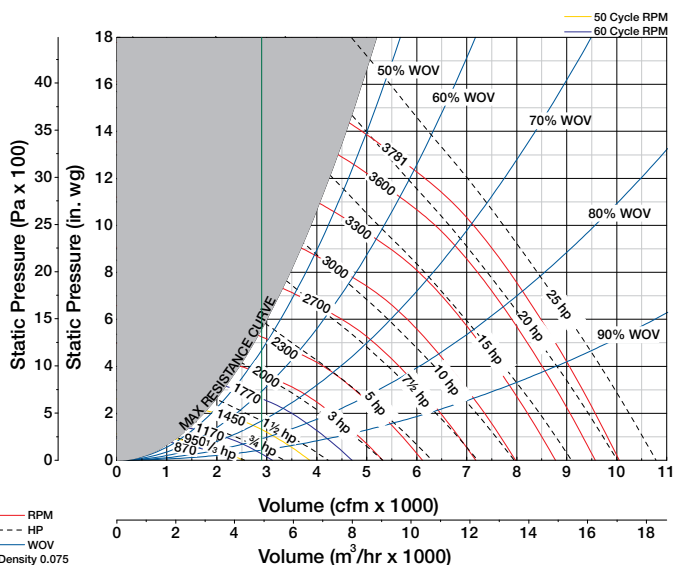
**AIR DATA**

**LV**  
Low Velocity

**MV**  
Medium Velocity



**HV**  
High Velocity



Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).



# Vektor-CD Size 18

AIR DATA

|  |
|--|
| 100% Wheel Width   |
| Windband Outlet Area = 3.06 ft <sup>2</sup>                      |
| Class II Fan Max rpm = 3001                                      |
| Class III Fan Max rpm = 3781                                     |
| Effective Plume @ 10 mph Crosswind Height {ft}                   |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.645)}{880} + 7.75$ |

| Performance Data             | LV                              | MV                              | HV                              |
|------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Nozzle Velocity {ft/min}     | Fan cfm<br>1.61 ft <sup>2</sup> | Fan cfm<br>1.29 ft <sup>2</sup> | Fan cfm<br>0.97 ft <sup>2</sup> |
| % WOV                        | cfm x 100<br>rpm x 3.01         | cfm x 100<br>rpm x 2.89         | cfm x 100<br>rpm x 2.64         |
| 3000 fpm: Inlet Airflow Rate | 4826 cfm                        | 3861 cfm                        | 2896 cfm                        |

# Vektor-CD Size 18 (HV Nozzle)

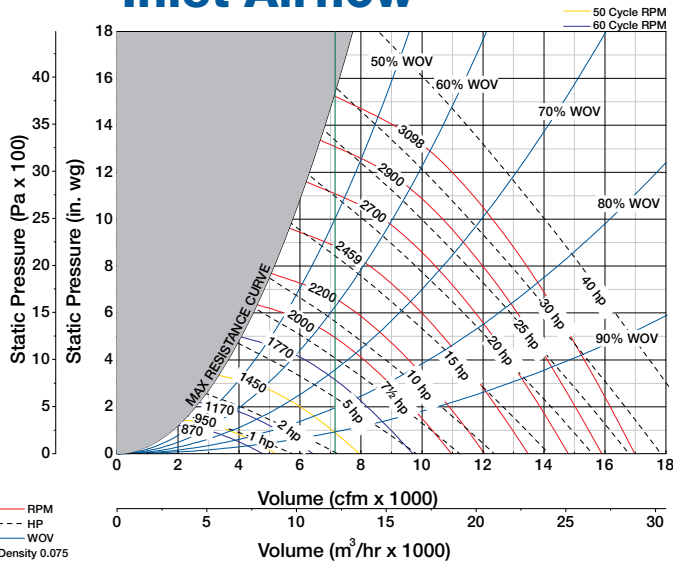
| Sound Power by Octave Band |      |     |     |     |     |     |     |    |    |     |     |                    |     |     |     |     |     |    |    |     |     |
|----------------------------|------|-----|-----|-----|-----|-----|-----|----|----|-----|-----|--------------------|-----|-----|-----|-----|-----|----|----|-----|-----|
| Inlet Sound Power          |      |     |     |     |     |     |     |    |    |     |     | Outlet Sound Power |     |     |     |     |     |    |    |     |     |
| rpm                        | %WOV | 1   | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA | 1                  | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA |
| 900                        | 100  | 81  | 84  | 76  | 71  | 65  | 60  | 53 | 51 | 74  | 62  | 76                 | 81  | 78  | 75  | 73  | 69  | 63 | 57 | 78  | 66  |
| 900                        | 80   | 81  | 81  | 73  | 69  | 63  | 59  | 52 | 48 | 71  | 60  | 77                 | 79  | 75  | 72  | 68  | 62  | 56 | 77 | 65  |     |
| 900                        | 60   | 81  | 78  | 70  | 67  | 62  | 57  | 51 | 45 | 69  | 58  | 77                 | 78  | 74  | 74  | 72  | 68  | 62 | 56 | 76  | 65  |
| 900                        | 50   | 84  | 78  | 70  | 66  | 62  | 57  | 50 | 44 | 69  | 58  | 79                 | 78  | 74  | 75  | 72  | 68  | 62 | 56 | 77  | 65  |
| 900                        | 40   | 85  | 79  | 70  | 65  | 61  | 56  | 51 | 44 | 69  | 58  | 80                 | 79  | 75  | 74  | 71  | 67  | 62 | 56 | 76  | 65  |
| 1300                       | 100  | 82  | 86  | 88  | 81  | 75  | 72  | 64 | 58 | 83  | 72  | 78                 | 85  | 86  | 83  | 78  | 74  | 68 | 64 | 84  | 73  |
| 1300                       | 80   | 79  | 84  | 85  | 79  | 73  | 69  | 62 | 56 | 81  | 69  | 76                 | 83  | 83  | 82  | 76  | 72  | 67 | 63 | 83  | 71  |
| 1300                       | 60   | 84  | 84  | 82  | 77  | 70  | 66  | 61 | 54 | 79  | 67  | 80                 | 83  | 81  | 82  | 74  | 71  | 67 | 63 | 82  | 70  |
| 1300                       | 50   | 87  | 86  | 81  | 76  | 70  | 66  | 61 | 54 | 78  | 67  | 84                 | 85  | 81  | 81  | 74  | 71  | 67 | 63 | 81  | 70  |
| 1300                       | 40   | 91  | 88  | 80  | 76  | 69  | 65  | 60 | 54 | 78  | 67  | 87                 | 87  | 82  | 82  | 74  | 71  | 67 | 63 | 82  | 71  |
| 1800                       | 100  | 91  | 91  | 93  | 89  | 84  | 82  | 75 | 67 | 91  | 79  | 91                 | 89  | 92  | 90  | 87  | 84  | 77 | 71 | 92  | 81  |
| 1800                       | 80   | 89  | 89  | 90  | 85  | 81  | 79  | 72 | 65 | 88  | 76  | 90                 | 87  | 90  | 87  | 83  | 81  | 75 | 70 | 89  | 78  |
| 1800                       | 60   | 91  | 91  | 88  | 82  | 78  | 76  | 70 | 64 | 85  | 74  | 91                 | 87  | 88  | 86  | 81  | 80  | 75 | 70 | 88  | 76  |
| 1800                       | 50   | 93  | 94  | 90  | 83  | 78  | 76  | 70 | 64 | 86  | 75  | 93                 | 93  | 90  | 86  | 82  | 80  | 75 | 70 | 89  | 77  |
| 1800                       | 40   | 97  | 96  | 91  | 84  | 77  | 75  | 69 | 64 | 87  | 76  | 95                 | 96  | 91  | 86  | 82  | 80  | 75 | 70 | 89  | 78  |
| 2600                       | 100  | 96  | 94  | 94  | 98  | 93  | 91  | 86 | 79 | 99  | 87  | 94                 | 93  | 93  | 99  | 95  | 92  | 87 | 81 | 100 | 89  |
| 2600                       | 80   | 93  | 91  | 92  | 95  | 90  | 89  | 83 | 77 | 96  | 85  | 91                 | 91  | 92  | 96  | 93  | 90  | 85 | 78 | 98  | 86  |
| 2600                       | 60   | 98  | 97  | 93  | 93  | 87  | 86  | 81 | 76 | 94  | 83  | 94                 | 97  | 95  | 96  | 90  | 88  | 83 | 78 | 97  | 85  |
| 2600                       | 50   | 102 | 100 | 96  | 94  | 87  | 85  | 81 | 75 | 95  | 84  | 97                 | 101 | 101 | 97  | 91  | 88  | 83 | 78 | 98  | 87  |
| 2600                       | 40   | 105 | 103 | 98  | 94  | 87  | 84  | 80 | 75 | 96  | 84  | 98                 | 103 | 100 | 98  | 92  | 88  | 82 | 78 | 99  | 87  |
| 3781                       | 100  | 104 | 105 | 104 | 107 | 101 | 101 | 98 | 91 | 108 | 97  | 105                | 103 | 103 | 108 | 102 | 102 | 98 | 92 | 109 | 98  |
| 3781                       | 80   | 101 | 102 | 101 | 105 | 98  | 98  | 95 | 88 | 106 | 94  | 103                | 100 | 101 | 106 | 100 | 100 | 96 | 90 | 107 | 96  |
| 3781                       | 60   | 105 | 109 | 106 | 104 | 96  | 95  | 92 | 87 | 105 | 93  | 104                | 104 | 107 | 106 | 99  | 98  | 94 | 88 | 107 | 95  |
| 3781                       | 50   | 108 | 112 | 110 | 104 | 98  | 94  | 92 | 86 | 106 | 95  | 106                | 107 | 113 | 107 | 100 | 98  | 94 | 88 | 109 | 97  |
| 3781                       | 40   | 107 | 116 | 112 | 105 | 98  | 94  | 91 | 86 | 108 | 96  | 106                | 109 | 114 | 109 | 101 | 99  | 94 | 88 | 110 | 99  |

SOUND DATA

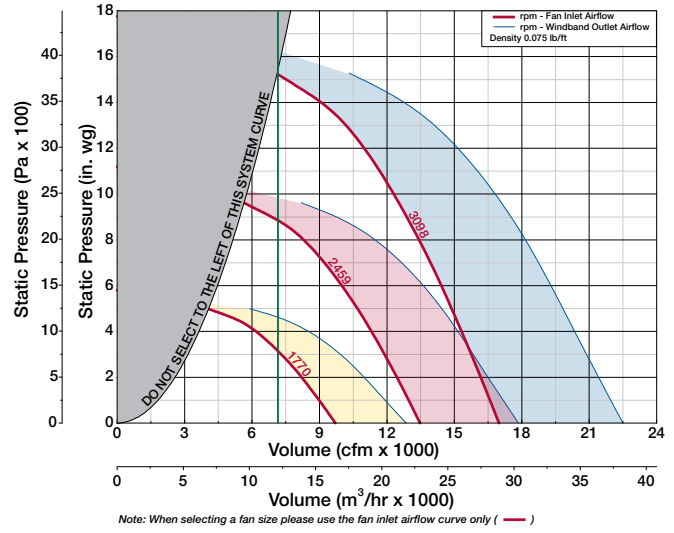
The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

# Vektor-CD Size 22

## Inlet Airflow



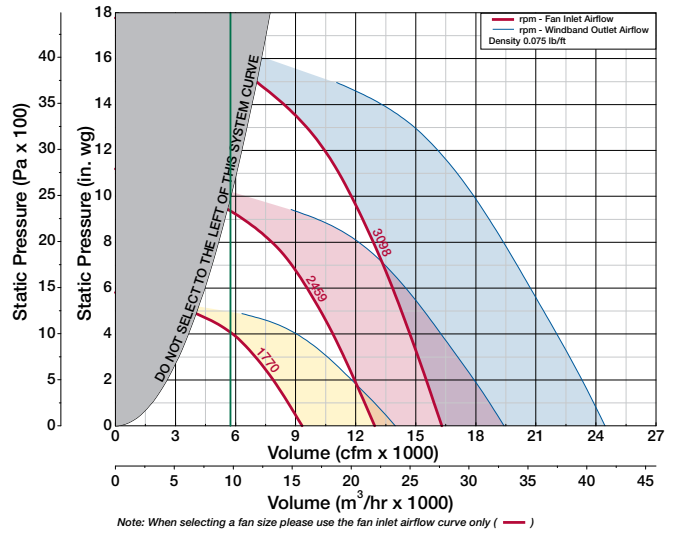
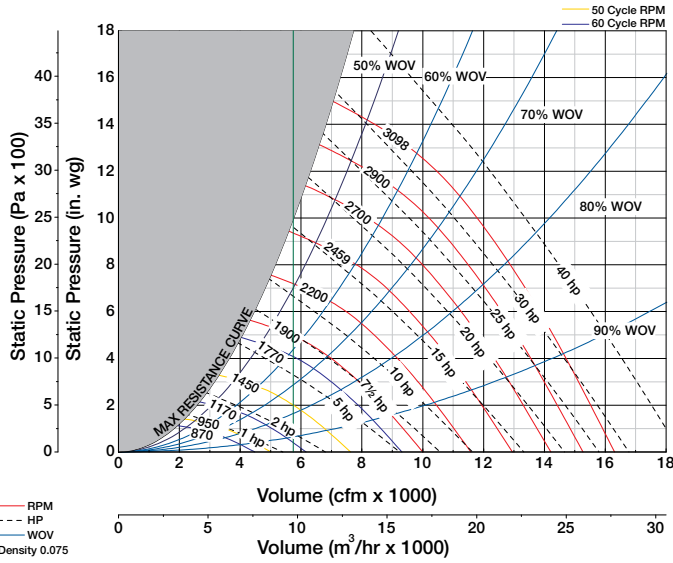
## Outlet Airflow



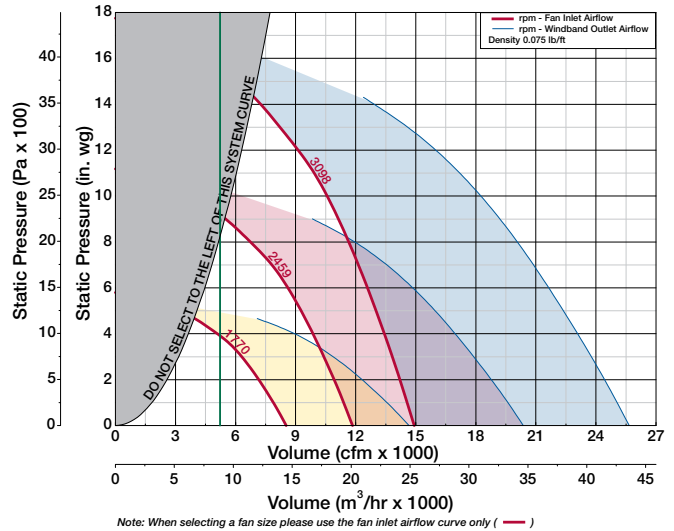
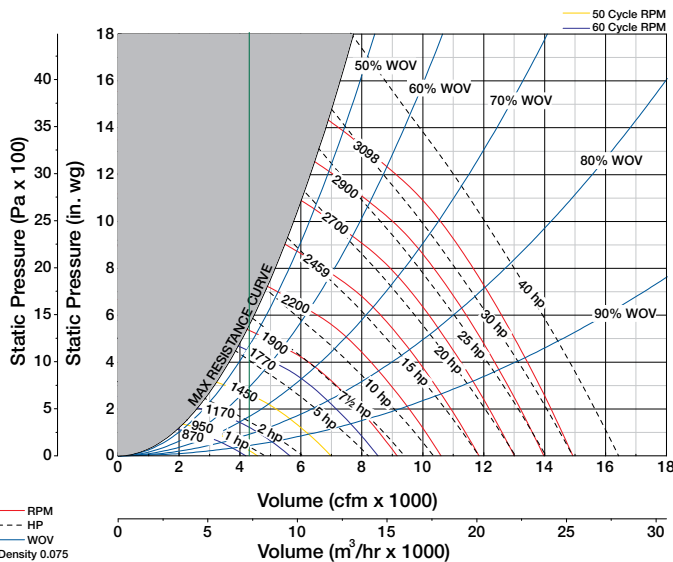
**AIR DATA**

**LV**  
Low Velocity

**MV**  
Medium Velocity



**HV**  
High Velocity



Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).

|  |
|--|
| 100% Wheel Width   |
| Windband Outlet Area = 4.56 ft <sup>2</sup>                      |
| Class II Fan Max rpm = 2459                                      |
| Class III Fan Max rpm = 3098                                     |
| Effective Plume @ 10 mph Crosswind Height {ft}                   |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.529)}{880} + 9.25$ |

| Performance Data             | LV                              | MV                              | HV                              |
|------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Nozzle Velocity {ft/min}     | Fan cfm<br>2.39 ft <sup>2</sup> | Fan cfm<br>1.91 ft <sup>2</sup> | Fan cfm<br>1.44 ft <sup>2</sup> |
| % WOV                        | cfm x 100<br>rpm x 5.48         | cfm x 100<br>rpm x 5.26         | cfm x 100<br>rpm x 4.82         |
| 3000 fpm: Inlet Airflow Rate | 7170 cfm                        | 5730 cfm                        | 4320 cfm                        |

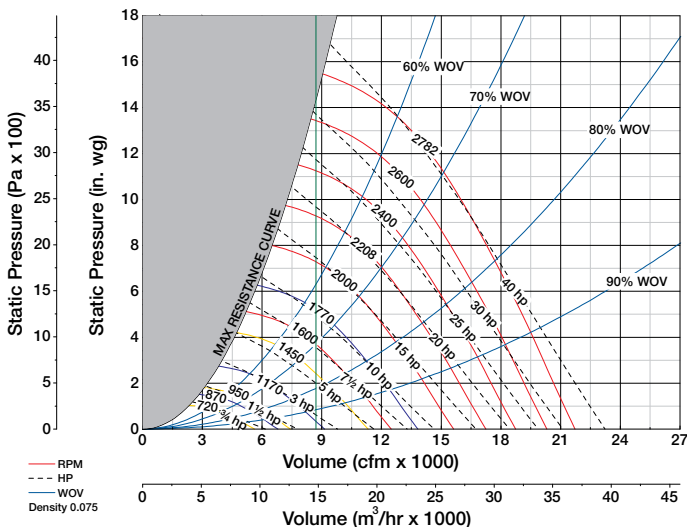
## Vektor-CD Size 22 (HV Nozzle)

| Sound Power by Octave Band |      |     |     |     |     |     |     |    |    |     |     |                    |     |     |     |     |     |    |    |     |     |
|----------------------------|------|-----|-----|-----|-----|-----|-----|----|----|-----|-----|--------------------|-----|-----|-----|-----|-----|----|----|-----|-----|
| Inlet Sound Power          |      |     |     |     |     |     |     |    |    |     |     | Outlet Sound Power |     |     |     |     |     |    |    |     |     |
| rpm                        | %WOV | 1   | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA | 1                  | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA |
| 800                        | 100  | 91  | 91  | 80  | 74  | 68  | 63  | 57 | 53 | 79  | 67  | 87                 | 88  | 82  | 79  | 77  | 71  | 66 | 59 | 82  | 70  |
| 800                        | 80   | 91  | 88  | 77  | 72  | 66  | 61  | 55 | 51 | 76  | 65  | 88                 | 86  | 79  | 79  | 76  | 70  | 65 | 58 | 81  | 69  |
| 800                        | 60   | 92  | 85  | 74  | 70  | 65  | 60  | 53 | 48 | 74  | 63  | 89                 | 84  | 78  | 78  | 76  | 70  | 65 | 58 | 80  | 69  |
| 800                        | 50   | 94  | 85  | 74  | 69  | 64  | 59  | 53 | 47 | 74  | 63  | 90                 | 85  | 79  | 79  | 75  | 70  | 65 | 58 | 80  | 69  |
| 800                        | 40   | 95  | 86  | 74  | 69  | 64  | 59  | 53 | 47 | 75  | 63  | 92                 | 86  | 79  | 78  | 75  | 70  | 65 | 58 | 80  | 69  |
| 1100                       | 100  | 91  | 94  | 88  | 81  | 78  | 73  | 65 | 61 | 85  | 74  | 88                 | 93  | 87  | 83  | 80  | 75  | 70 | 63 | 86  | 74  |
| 1100                       | 80   | 89  | 91  | 85  | 78  | 75  | 70  | 63 | 58 | 82  | 71  | 87                 | 91  | 85  | 81  | 78  | 73  | 69 | 62 | 84  | 72  |
| 1100                       | 60   | 93  | 91  | 82  | 75  | 72  | 68  | 62 | 55 | 80  | 69  | 90                 | 90  | 85  | 79  | 76  | 73  | 69 | 62 | 83  | 71  |
| 1100                       | 50   | 96  | 93  | 81  | 76  | 72  | 68  | 61 | 55 | 81  | 70  | 94                 | 92  | 84  | 80  | 76  | 73  | 69 | 62 | 83  | 72  |
| 1100                       | 40   | 100 | 95  | 81  | 75  | 71  | 67  | 61 | 55 | 82  | 71  | 96                 | 94  | 85  | 80  | 76  | 72  | 69 | 62 | 84  | 72  |
| 1600                       | 100  | 102 | 99  | 98  | 91  | 87  | 84  | 77 | 70 | 94  | 83  | 102                | 97  | 98  | 93  | 90  | 86  | 80 | 73 | 96  | 84  |
| 1600                       | 80   | 100 | 97  | 95  | 88  | 85  | 81  | 75 | 68 | 92  | 80  | 101                | 94  | 95  | 91  | 87  | 84  | 78 | 72 | 93  | 82  |
| 1600                       | 60   | 103 | 97  | 93  | 85  | 82  | 79  | 73 | 67 | 90  | 78  | 102                | 95  | 93  | 90  | 85  | 82  | 77 | 72 | 92  | 80  |
| 1600                       | 50   | 105 | 101 | 93  | 86  | 82  | 78  | 73 | 66 | 91  | 79  | 104                | 101 | 94  | 90  | 85  | 82  | 77 | 72 | 93  | 81  |
| 1600                       | 40   | 109 | 103 | 95  | 87  | 81  | 77  | 72 | 66 | 92  | 81  | 106                | 103 | 95  | 90  | 86  | 82  | 77 | 72 | 94  | 82  |
| 2200                       | 100  | 105 | 99  | 101 | 97  | 95  | 93  | 87 | 80 | 100 | 89  | 103                | 98  | 101 | 98  | 97  | 94  | 88 | 82 | 102 | 90  |
| 2200                       | 80   | 102 | 97  | 98  | 94  | 92  | 90  | 84 | 78 | 97  | 86  | 99                 | 96  | 99  | 96  | 95  | 92  | 86 | 80 | 100 | 88  |
| 2200                       | 60   | 108 | 102 | 98  | 92  | 89  | 88  | 82 | 77 | 96  | 85  | 103                | 103 | 99  | 95  | 92  | 89  | 84 | 79 | 98  | 86  |
| 2200                       | 50   | 111 | 105 | 99  | 94  | 89  | 87  | 82 | 77 | 97  | 86  | 106                | 109 | 101 | 95  | 93  | 89  | 84 | 79 | 100 | 88  |
| 2200                       | 40   | 115 | 108 | 100 | 94  | 88  | 86  | 81 | 76 | 98  | 87  | 108                | 110 | 102 | 96  | 94  | 89  | 84 | 79 | 100 | 89  |
| 3098                       | 100  | 115 | 110 | 107 | 109 | 102 | 102 | 97 | 90 | 110 | 98  | 115                | 109 | 107 | 111 | 104 | 103 | 98 | 92 | 111 | 100 |
| 3098                       | 80   | 112 | 108 | 105 | 107 | 99  | 99  | 94 | 88 | 107 | 96  | 113                | 106 | 105 | 108 | 102 | 101 | 96 | 90 | 109 | 97  |
| 3098                       | 60   | 117 | 114 | 108 | 105 | 97  | 96  | 92 | 87 | 107 | 95  | 115                | 111 | 110 | 108 | 100 | 99  | 94 | 89 | 109 | 97  |
| 3098                       | 50   | 120 | 117 | 112 | 106 | 98  | 96  | 92 | 87 | 109 | 97  | 117                | 114 | 116 | 109 | 101 | 99  | 94 | 89 | 111 | 100 |
| 3098                       | 40   | 122 | 121 | 114 | 106 | 98  | 95  | 91 | 86 | 110 | 99  | 117                | 117 | 117 | 110 | 102 | 99  | 94 | 89 | 112 | 101 |

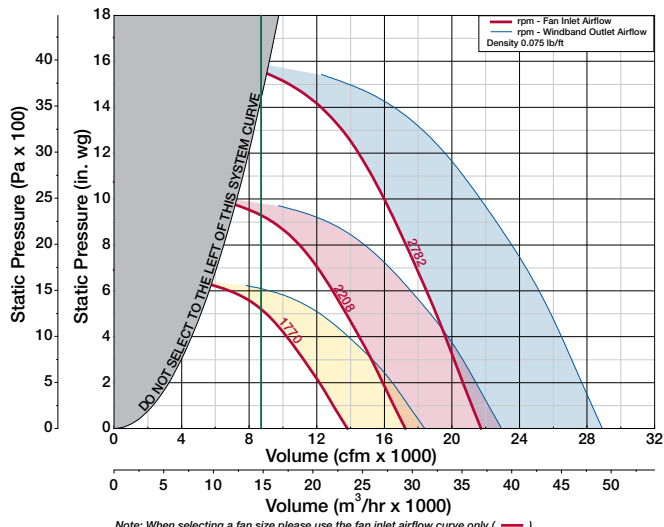
The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

# Vektor-CD Size 24

## Inlet Airflow



## Outlet Airflow

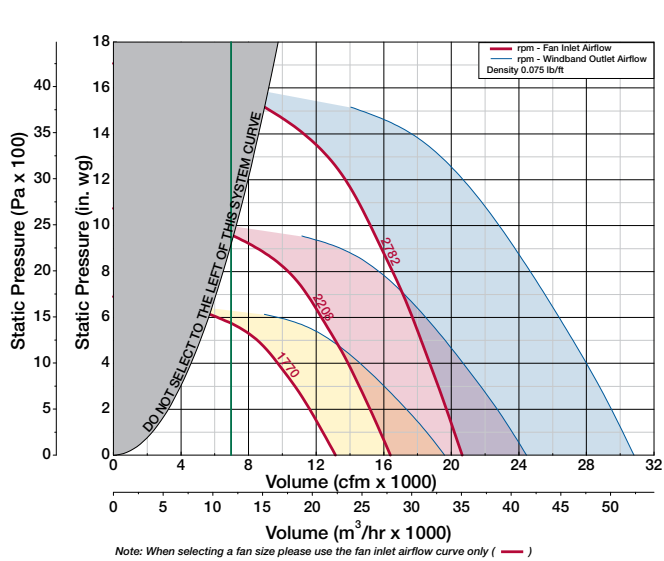
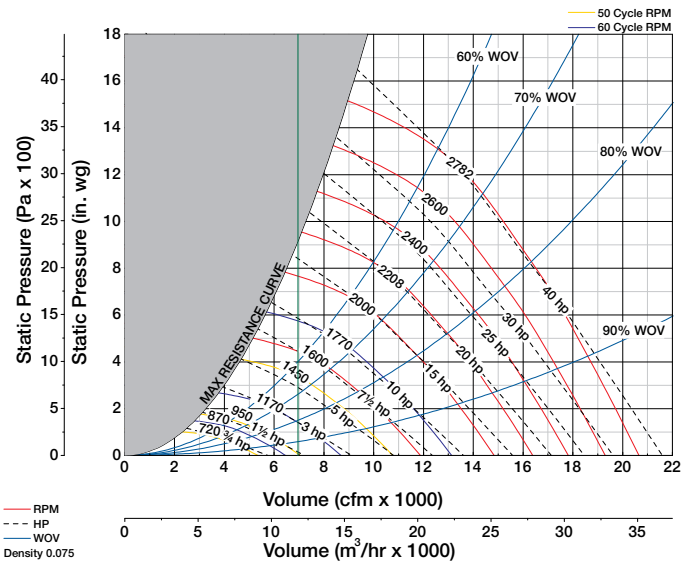


Note: When selecting a fan size please use the fan inlet airflow curve only ( — )

**AIR DATA**

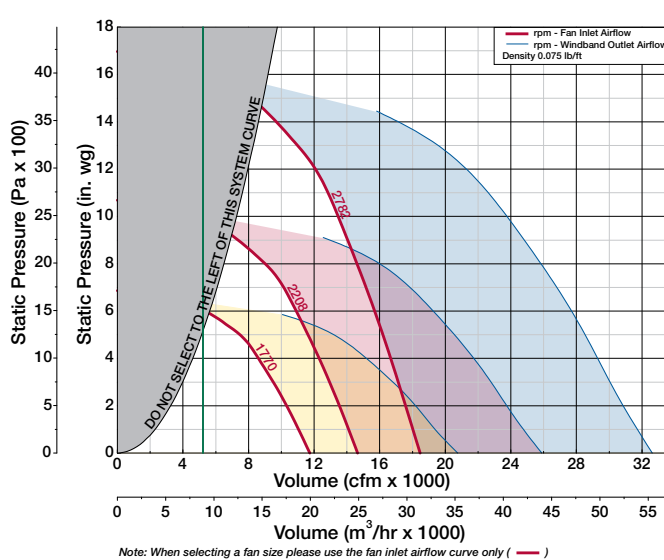
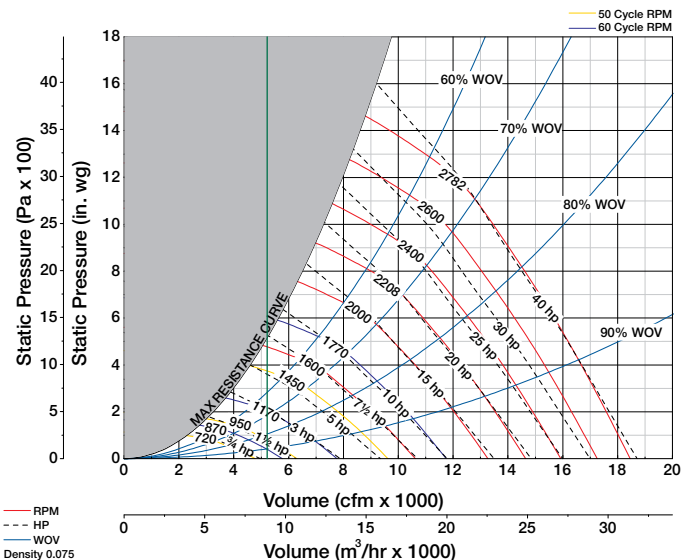
**LV**  
Low Velocity

**MV**  
Medium Velocity



Note: When selecting a fan size please use the fan inlet airflow curve only ( — )

**HV**  
High Velocity



Note: When selecting a fan size please use the fan inlet airflow curve only ( — )

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).

|  |
|--|
| 100% Wheel Width   |
| Windband Outlet Area = 5.55 ft <sup>2</sup>                      |
| Class II Fan Max rpm = 2208                                      |
| Class III Fan Max rpm = 2782                                     |
| Effective Plume @ 10 mph Crosswind Height {ft}                   |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.479)}{880} + 9.75$ |

| Performance Data             | LV                              | MV                              | HV                              |
|------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Nozzle Velocity {ft/min}     | Fan cfm<br>2.90 ft <sup>2</sup> | Fan cfm<br>2.32 ft <sup>2</sup> | Fan cfm<br>1.74 ft <sup>2</sup> |
| % WOV                        | cfm x 100<br>rpm x 7.76         | cfm x 100<br>rpm x 7.37         | cfm x 100<br>rpm x 6.59         |
| 3000 fpm: Inlet Airflow Rate | 8700 cfm                        | 6960 cfm                        | 5220 cfm                        |

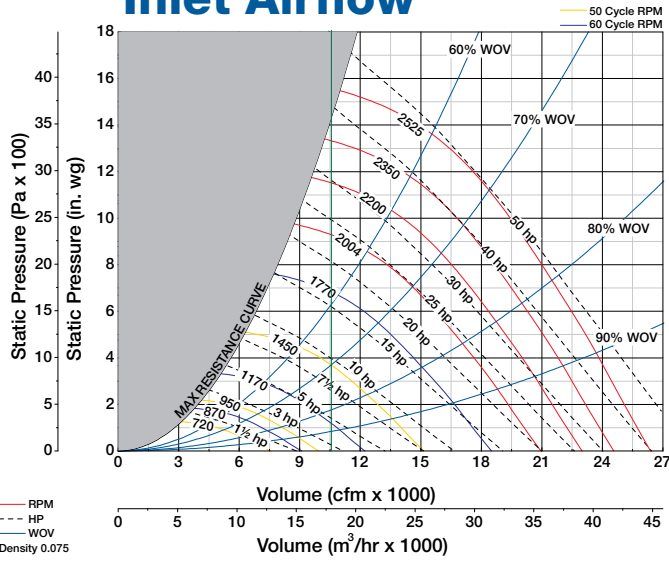
## Vektor-CD Size 24 (HV Nozzle)

| Sound Power by Octave Band |      |     |     |     |     |     |    |    |    |     |     |                    |     |     |     |     |     |    |    |     |     |
|----------------------------|------|-----|-----|-----|-----|-----|----|----|----|-----|-----|--------------------|-----|-----|-----|-----|-----|----|----|-----|-----|
| Inlet Sound Power          |      |     |     |     |     |     |    |    |    |     |     | Outlet Sound Power |     |     |     |     |     |    |    |     |     |
| rpm                        | %WOV | 1   | 2   | 3   | 4   | 5   | 6  | 7  | 8  | LwA | dBA | 1                  | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA |
| 700                        | 100  | 80  | 86  | 78  | 72  | 65  | 59 | 50 | 43 | 75  | 64  | 78                 | 85  | 78  | 78  | 70  | 63  | 55 | 47 | 78  | 66  |
| 700                        | 80   | 78  | 83  | 74  | 69  | 63  | 57 | 49 | 43 | 72  | 61  | 77                 | 83  | 74  | 75  | 67  | 62  | 54 | 46 | 75  | 64  |
| 700                        | 60   | 80  | 80  | 70  | 66  | 59  | 54 | 48 | 40 | 69  | 57  | 79                 | 81  | 71  | 74  | 65  | 61  | 54 | 45 | 74  | 62  |
| 700                        | 50   | 83  | 82  | 71  | 68  | 59  | 55 | 48 | 41 | 71  | 59  | 81                 | 81  | 71  | 74  | 66  | 61  | 54 | 45 | 74  | 62  |
| 700                        | 40   | 84  | 83  | 71  | 68  | 59  | 55 | 49 | 41 | 71  | 59  | 83                 | 83  | 72  | 74  | 66  | 61  | 53 | 45 | 74  | 63  |
| 1000                       | 100  | 81  | 90  | 84  | 78  | 74  | 69 | 61 | 55 | 81  | 70  | 81                 | 88  | 84  | 81  | 77  | 71  | 64 | 57 | 83  | 71  |
| 1000                       | 80   | 78  | 87  | 80  | 75  | 71  | 66 | 59 | 54 | 78  | 66  | 79                 | 87  | 81  | 79  | 74  | 68  | 62 | 55 | 80  | 69  |
| 1000                       | 60   | 87  | 88  | 78  | 73  | 69  | 65 | 58 | 53 | 77  | 66  | 85                 | 86  | 80  | 78  | 72  | 67  | 61 | 55 | 79  | 68  |
| 1000                       | 50   | 90  | 89  | 79  | 75  | 70  | 66 | 59 | 53 | 78  | 67  | 89                 | 88  | 80  | 79  | 73  | 68  | 62 | 55 | 80  | 69  |
| 1000                       | 40   | 91  | 90  | 80  | 76  | 70  | 66 | 59 | 54 | 79  | 68  | 92                 | 89  | 80  | 78  | 74  | 68  | 61 | 55 | 80  | 69  |
| 1400                       | 100  | 89  | 92  | 95  | 87  | 82  | 79 | 71 | 66 | 90  | 79  | 91                 | 93  | 95  | 90  | 87  | 81  | 75 | 67 | 92  | 81  |
| 1400                       | 80   | 91  | 89  | 92  | 84  | 80  | 76 | 70 | 64 | 87  | 76  | 89                 | 91  | 93  | 87  | 82  | 77  | 72 | 64 | 89  | 78  |
| 1400                       | 60   | 95  | 94  | 92  | 83  | 77  | 74 | 68 | 63 | 87  | 75  | 93                 | 93  | 90  | 84  | 80  | 75  | 71 | 64 | 87  | 75  |
| 1400                       | 50   | 97  | 97  | 95  | 85  | 79  | 75 | 69 | 63 | 90  | 78  | 96                 | 97  | 92  | 86  | 83  | 77  | 71 | 65 | 89  | 78  |
| 1400                       | 40   | 99  | 98  | 97  | 85  | 79  | 76 | 69 | 64 | 91  | 79  | 101                | 100 | 92  | 86  | 83  | 77  | 72 | 65 | 90  | 79  |
| 2000                       | 100  | 95  | 95  | 101 | 96  | 91  | 88 | 82 | 75 | 98  | 86  | 101                | 99  | 103 | 99  | 96  | 91  | 85 | 79 | 101 | 90  |
| 2000                       | 80   | 97  | 94  | 100 | 95  | 88  | 86 | 79 | 74 | 96  | 85  | 97                 | 97  | 101 | 96  | 92  | 87  | 82 | 76 | 98  | 87  |
| 2000                       | 60   | 103 | 103 | 101 | 94  | 87  | 84 | 78 | 73 | 97  | 85  | 102                | 103 | 100 | 94  | 90  | 85  | 80 | 75 | 97  | 85  |
| 2000                       | 50   | 105 | 106 | 102 | 95  | 89  | 85 | 79 | 74 | 98  | 87  | 105                | 108 | 102 | 95  | 92  | 87  | 82 | 76 | 99  | 88  |
| 2000                       | 40   | 108 | 107 | 103 | 96  | 89  | 86 | 80 | 74 | 99  | 87  | 107                | 112 | 102 | 97  | 92  | 88  | 82 | 77 | 101 | 89  |
| 2782                       | 100  | 101 | 104 | 106 | 108 | 100 | 97 | 92 | 85 | 108 | 96  | 108                | 109 | 109 | 111 | 104 | 102 | 95 | 89 | 111 | 100 |
| 2782                       | 80   | 103 | 106 | 105 | 107 | 99  | 95 | 90 | 84 | 106 | 95  | 105                | 106 | 107 | 110 | 101 | 98  | 92 | 86 | 109 | 98  |
| 2782                       | 60   | 108 | 112 | 111 | 106 | 98  | 93 | 88 | 83 | 107 | 96  | 110                | 112 | 110 | 108 | 99  | 96  | 90 | 85 | 108 | 97  |
| 2782                       | 50   | 108 | 115 | 115 | 106 | 99  | 94 | 90 | 83 | 109 | 98  | 112                | 116 | 116 | 108 | 100 | 98  | 91 | 86 | 111 | 99  |
| 2782                       | 40   | 111 | 118 | 115 | 106 | 99  | 95 | 90 | 84 | 110 | 98  | 114                | 121 | 118 | 109 | 101 | 98  | 91 | 87 | 113 | 101 |

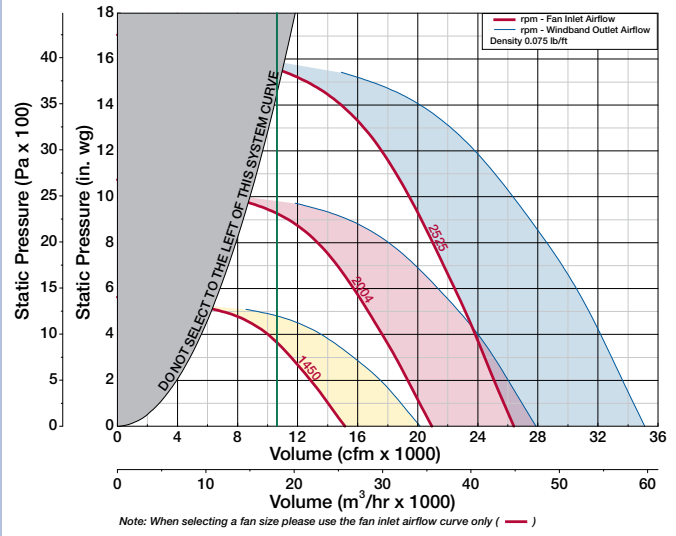
The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

# Vektor-CD Size 27

## Inlet Airflow



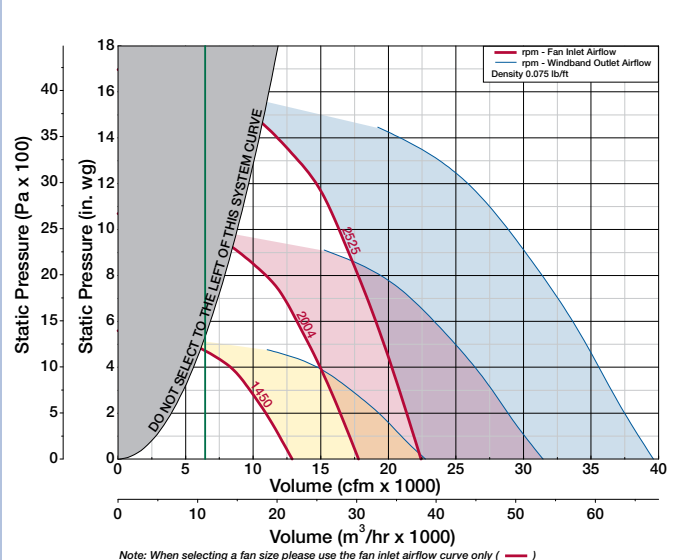
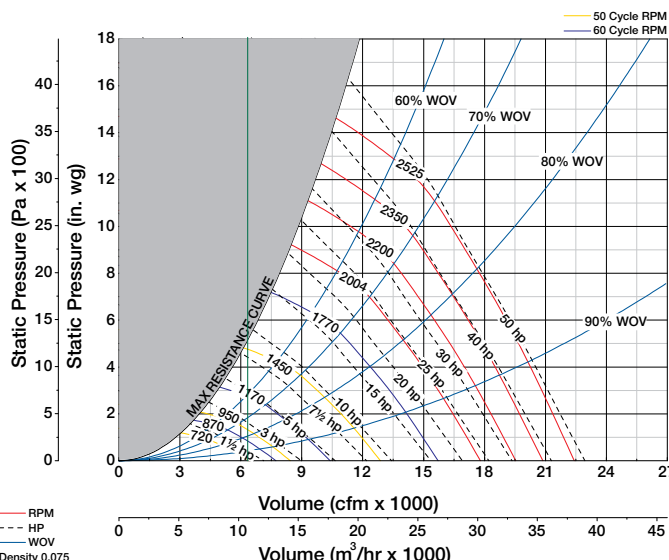
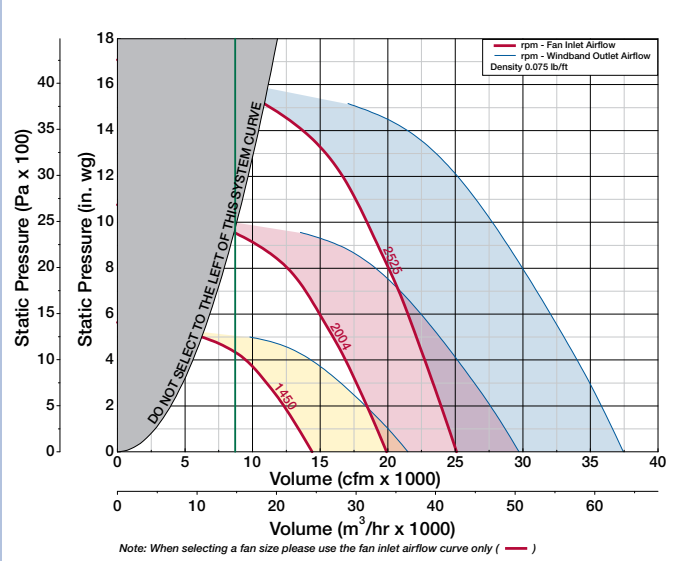
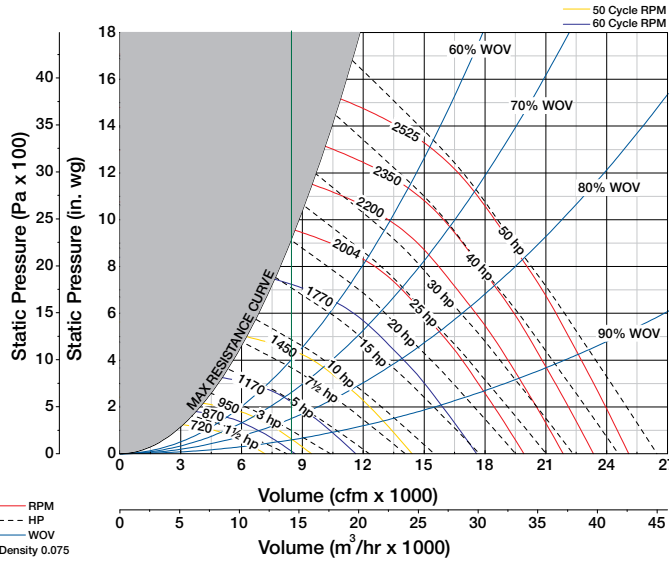
## Outlet Airflow



**AIR DATA**

**LV**  
Low Velocity

**MV**  
Medium Velocity



**HV**  
High Velocity

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).

|   |
|---|
| 100% Wheel Width  |
| Windband Outlet Area = 6.72 ft <sup>2</sup>                       |
| Class II Fan Max rpm = 2004                                       |
| Class III Fan Max rpm = 2525                                      |
| Effective Plume @ 10 mph Crosswind Height {ft}                    |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.435)}{880} + 10.75$ |

| Performance Data             | LV   | MV   | HV   |
|------------------------------|--|--|--|
| Nozzle Velocity {ft/min}     | $\frac{\text{Fan cfm}}{3.52 \text{ ft}^2}$             | $\frac{\text{Fan cfm}}{2.82 \text{ ft}^2}$             | $\frac{\text{Fan cfm}}{2.11 \text{ ft}^2}$             |
| % WOV                        | $\frac{\text{cfm} \times 100}{\text{rpm} \times 10.5}$ | $\frac{\text{cfm} \times 100}{\text{rpm} \times 9.94}$ | $\frac{\text{cfm} \times 100}{\text{rpm} \times 8.88}$ |
| 3000 fpm: Inlet Airflow Rate | 10560 cfm  | 8460 cfm   | 6330 cfm   |

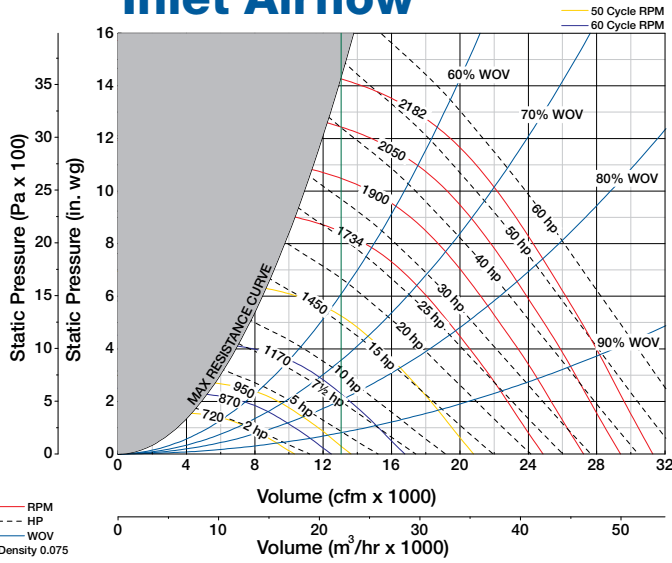
## Vektor-CD Size 27 (HV Nozzle)

| Sound Power by Octave Band |      |                   |     |     |     |     |    |    |    |     |     |                    |     |     |     |     |     |    |    |     |     |
|----------------------------|------|-------------------|-----|-----|-----|-----|----|----|----|-----|-----|--------------------|-----|-----|-----|-----|-----|----|----|-----|-----|
| rpm                        | %WOV | Inlet Sound Power |     |     |     |     |    |    |    |     |     | Outlet Sound Power |     |     |     |     |     |    |    |     |     |
|                            |      | 1                 | 2   | 3   | 4   | 5   | 6  | 7  | 8  | LwA | dBA | 1                  | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA |
| 600                        | 100  | 82                | 84  | 76  | 70  | 64  | 56 | 48 | 41 | 73  | 62  | 80                 | 84  | 77  | 74  | 68  | 61  | 53 | 45 | 75  | 64  |
| 600                        | 80   | 80                | 80  | 72  | 67  | 61  | 54 | 47 | 41 | 70  | 58  | 78                 | 81  | 74  | 71  | 66  | 60  | 52 | 44 | 73  | 61  |
| 600                        | 60   | 80                | 77  | 68  | 64  | 58  | 52 | 45 | 38 | 67  | 55  | 78                 | 79  | 72  | 69  | 65  | 59  | 52 | 43 | 71  | 60  |
| 600                        | 50   | 83                | 78  | 69  | 65  | 58  | 53 | 46 | 39 | 68  | 56  | 80                 | 79  | 72  | 70  | 65  | 59  | 52 | 43 | 72  | 60  |
| 600                        | 40   | 84                | 79  | 70  | 65  | 58  | 53 | 46 | 39 | 68  | 57  | 81                 | 80  | 72  | 70  | 64  | 59  | 52 | 42 | 72  | 60  |
| 900                        | 100  | 83                | 91  | 83  | 78  | 74  | 68 | 61 | 55 | 81  | 70  | 83                 | 89  | 84  | 81  | 77  | 71  | 64 | 57 | 83  | 71  |
| 900                        | 80   | 80                | 88  | 80  | 75  | 71  | 65 | 59 | 54 | 78  | 67  | 81                 | 88  | 82  | 78  | 74  | 69  | 61 | 55 | 80  | 69  |
| 900                        | 60   | 88                | 88  | 78  | 73  | 69  | 64 | 58 | 53 | 77  | 66  | 85                 | 86  | 81  | 76  | 72  | 67  | 61 | 55 | 79  | 67  |
| 900                        | 50   | 91                | 89  | 79  | 75  | 70  | 65 | 58 | 54 | 78  | 67  | 89                 | 88  | 82  | 78  | 73  | 68  | 61 | 56 | 80  | 69  |
| 900                        | 40   | 92                | 90  | 80  | 75  | 70  | 65 | 59 | 54 | 79  | 67  | 92                 | 88  | 81  | 77  | 74  | 68  | 61 | 55 | 80  | 69  |
| 1200                       | 100  | 89                | 93  | 92  | 85  | 81  | 77 | 70 | 64 | 88  | 77  | 90                 | 93  | 93  | 89  | 85  | 79  | 73 | 66 | 91  | 79  |
| 1200                       | 80   | 88                | 91  | 90  | 83  | 79  | 74 | 68 | 63 | 86  | 75  | 87                 | 92  | 90  | 85  | 81  | 76  | 70 | 63 | 87  | 76  |
| 1200                       | 60   | 94                | 93  | 87  | 81  | 76  | 72 | 66 | 62 | 84  | 73  | 92                 | 92  | 88  | 83  | 79  | 74  | 69 | 63 | 86  | 74  |
| 1200                       | 50   | 97                | 97  | 88  | 83  | 78  | 74 | 67 | 62 | 87  | 75  | 95                 | 96  | 89  | 85  | 81  | 75  | 69 | 63 | 88  | 76  |
| 1200                       | 40   | 98                | 98  | 89  | 83  | 78  | 74 | 67 | 63 | 87  | 76  | 101                | 98  | 89  | 85  | 82  | 76  | 70 | 63 | 88  | 77  |
| 1800                       | 100  | 96                | 96  | 101 | 95  | 91  | 88 | 81 | 75 | 98  | 86  | 101                | 100 | 103 | 99  | 97  | 91  | 85 | 79 | 102 | 90  |
| 1800                       | 80   | 98                | 95  | 101 | 94  | 89  | 86 | 79 | 74 | 97  | 85  | 97                 | 97  | 102 | 96  | 92  | 87  | 82 | 76 | 98  | 87  |
| 1800                       | 60   | 103               | 103 | 100 | 94  | 87  | 84 | 78 | 73 | 96  | 85  | 102                | 103 | 100 | 94  | 91  | 85  | 80 | 75 | 97  | 86  |
| 1800                       | 50   | 105               | 106 | 101 | 95  | 89  | 86 | 79 | 74 | 98  | 86  | 105                | 109 | 102 | 95  | 92  | 87  | 81 | 76 | 99  | 88  |
| 1800                       | 40   | 109               | 108 | 103 | 95  | 89  | 86 | 80 | 74 | 99  | 87  | 108                | 113 | 102 | 96  | 93  | 87  | 82 | 78 | 101 | 90  |
| 2525                       | 100  | 103               | 105 | 108 | 108 | 100 | 97 | 92 | 85 | 108 | 96  | 110                | 110 | 111 | 111 | 105 | 102 | 95 | 89 | 111 | 100 |
| 2525                       | 80   | 105               | 106 | 107 | 107 | 99  | 95 | 89 | 84 | 107 | 95  | 106                | 106 | 109 | 109 | 101 | 98  | 92 | 86 | 109 | 97  |
| 2525                       | 60   | 110               | 113 | 112 | 106 | 98  | 93 | 88 | 83 | 108 | 96  | 111                | 113 | 110 | 107 | 99  | 96  | 90 | 85 | 108 | 96  |
| 2525                       | 50   | 111               | 116 | 115 | 106 | 99  | 95 | 90 | 83 | 110 | 98  | 114                | 118 | 115 | 108 | 101 | 98  | 91 | 86 | 111 | 99  |
| 2525                       | 40   | 114               | 119 | 116 | 106 | 99  | 95 | 90 | 84 | 111 | 99  | 116                | 122 | 116 | 108 | 101 | 98  | 92 | 87 | 112 | 100 |

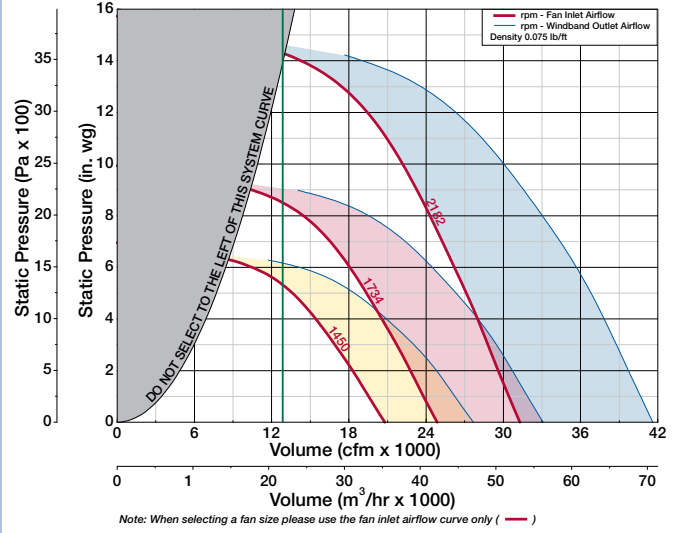
The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

# Vektor-CD Size 30

## Inlet Airflow



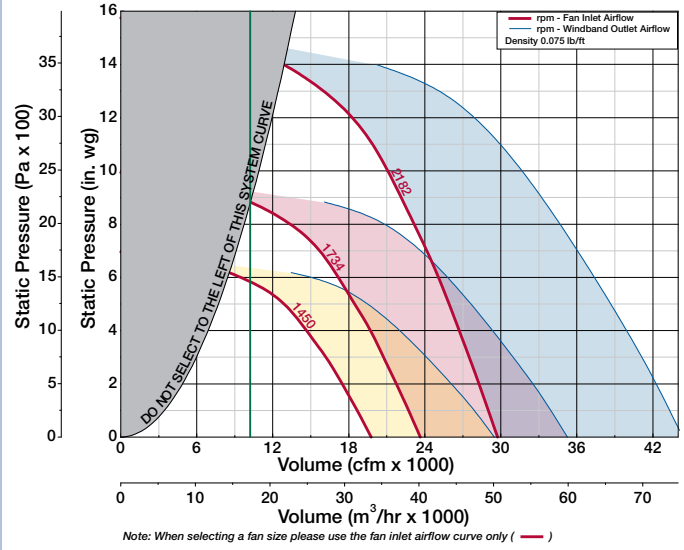
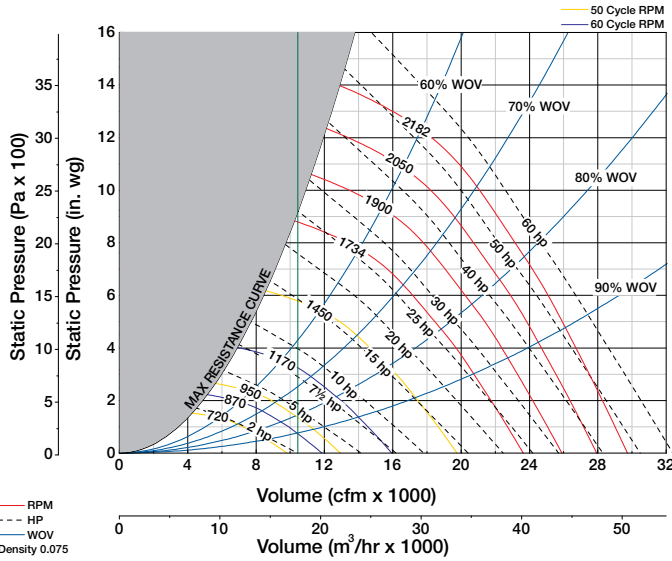
## Outlet Airflow



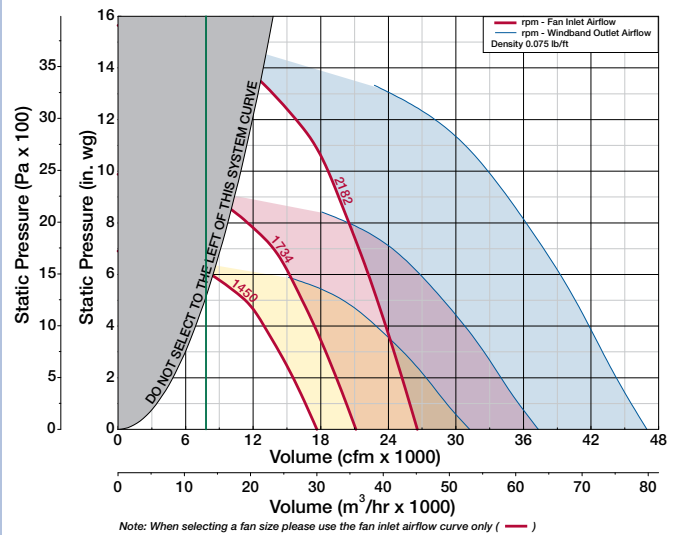
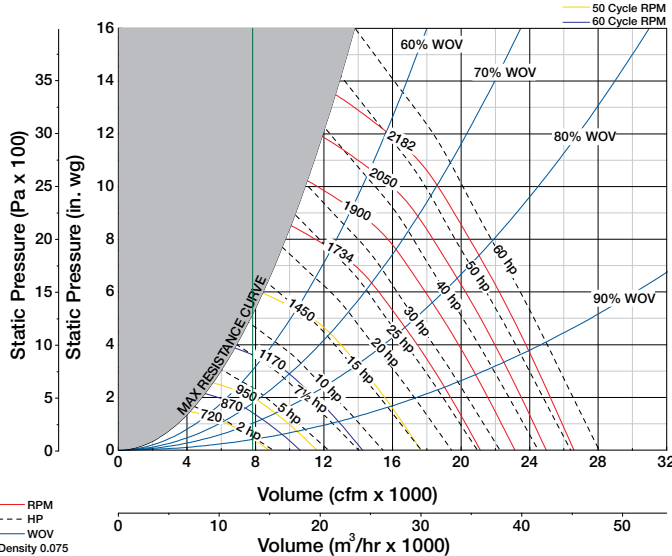
**AIR DATA**

**LV**  
Low Velocity

**MV**  
Medium Velocity



**HV**  
High Velocity



Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).



|   |
|---|
| 100% Wheel Width  |
| Windband Outlet Area = 8.3 ft <sup>2</sup>                        |
| Class II Fan Max rpm = 1734                                       |
| Class III Fan Max rpm = 2182                                      |
| Effective Plume @ 10 mph Crosswind Height {ft}                    |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.392)}{880} + 11.58$ |

| Performance Data             | LV   | MV   | HV   |
|------------------------------|--|--|--|
| Nozzle Velocity {ft/min}     | $\frac{\text{Fan cfm}}{4.35 \text{ ft}^2}$             | $\frac{\text{Fan cfm}}{3.48 \text{ ft}^2}$             | $\frac{\text{Fan cfm}}{2.61 \text{ ft}^2}$             |
| % WOV                        | $\frac{\text{cfm} \times 100}{\text{rpm} \times 14.3}$ | $\frac{\text{cfm} \times 100}{\text{rpm} \times 13.6}$ | $\frac{\text{cfm} \times 100}{\text{rpm} \times 12.2}$ |
| 3000 fpm: Inlet Airflow Rate | 13050 cfm  | 10440 cfm  | 7830 cfm   |

## Vektor-CD Size 30 (HV Nozzle)

| Sound Power by Octave Band |      |                   |     |     |     |    |    |    |    |     |     |                    |     |     |     |     |     |    |    |     |     |
|----------------------------|------|-------------------|-----|-----|-----|----|----|----|----|-----|-----|--------------------|-----|-----|-----|-----|-----|----|----|-----|-----|
|                            |      | Inlet Sound Power |     |     |     |    |    |    |    |     |     | Outlet Sound Power |     |     |     |     |     |    |    |     |     |
| rpm                        | %WOV | 1                 | 2   | 3   | 4   | 5  | 6  | 7  | 8  | LwA | dBA | 1                  | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA |
| 550                        | 100  | 85                | 84  | 77  | 69  | 64 | 57 | 48 | 42 | 73  | 62  | 84                 | 84  | 80  | 73  | 69  | 62  | 54 | 45 | 76  | 65  |
| 550                        | 80   | 84                | 80  | 73  | 67  | 62 | 55 | 47 | 42 | 70  | 59  | 83                 | 81  | 76  | 70  | 67  | 60  | 53 | 45 | 73  | 62  |
| 550                        | 60   | 82                | 76  | 69  | 63  | 59 | 53 | 46 | 39 | 67  | 55  | 82                 | 78  | 75  | 67  | 66  | 60  | 53 | 43 | 72  | 60  |
| 550                        | 50   | 85                | 78  | 71  | 64  | 59 | 53 | 46 | 39 | 68  | 57  | 83                 | 78  | 75  | 68  | 66  | 60  | 53 | 43 | 72  | 60  |
| 550                        | 40   | 86                | 78  | 71  | 64  | 59 | 53 | 46 | 40 | 68  | 57  | 84                 | 79  | 76  | 68  | 66  | 60  | 52 | 43 | 72  | 61  |
| 800                        | 100  | 85                | 91  | 83  | 77  | 74 | 67 | 61 | 55 | 81  | 69  | 85                 | 89  | 84  | 80  | 76  | 71  | 63 | 57 | 82  | 71  |
| 800                        | 80   | 82                | 89  | 80  | 74  | 71 | 65 | 58 | 54 | 78  | 67  | 84                 | 88  | 83  | 77  | 73  | 68  | 61 | 55 | 80  | 69  |
| 800                        | 60   | 89                | 88  | 78  | 72  | 69 | 64 | 58 | 54 | 77  | 65  | 86                 | 86  | 82  | 75  | 72  | 67  | 60 | 55 | 79  | 67  |
| 800                        | 50   | 91                | 89  | 80  | 74  | 70 | 64 | 58 | 54 | 78  | 67  | 90                 | 87  | 82  | 77  | 73  | 68  | 61 | 56 | 80  | 68  |
| 800                        | 40   | 92                | 90  | 80  | 74  | 70 | 64 | 58 | 54 | 79  | 67  | 92                 | 88  | 82  | 77  | 73  | 68  | 60 | 55 | 80  | 68  |
| 1100                       | 100  | 90                | 96  | 93  | 86  | 82 | 77 | 70 | 65 | 89  | 78  | 91                 | 96  | 93  | 89  | 86  | 80  | 73 | 66 | 91  | 80  |
| 1100                       | 80   | 89                | 93  | 90  | 83  | 80 | 75 | 68 | 64 | 87  | 75  | 88                 | 95  | 90  | 85  | 82  | 76  | 70 | 64 | 88  | 76  |
| 1100                       | 60   | 96                | 95  | 87  | 81  | 77 | 72 | 67 | 63 | 85  | 73  | 93                 | 94  | 88  | 83  | 80  | 75  | 69 | 63 | 86  | 75  |
| 1100                       | 50   | 98                | 98  | 89  | 83  | 79 | 74 | 68 | 63 | 87  | 76  | 97                 | 96  | 89  | 85  | 82  | 76  | 70 | 64 | 88  | 76  |
| 1100                       | 40   | 100               | 100 | 89  | 84  | 79 | 74 | 68 | 64 | 88  | 77  | 103                | 98  | 89  | 86  | 83  | 76  | 70 | 64 | 89  | 78  |
| 1600                       | 100  | 96                | 98  | 102 | 95  | 91 | 88 | 81 | 75 | 98  | 86  | 101                | 101 | 104 | 99  | 97  | 90  | 85 | 78 | 102 | 90  |
| 1600                       | 80   | 98                | 96  | 101 | 93  | 89 | 85 | 79 | 74 | 96  | 85  | 98                 | 98  | 103 | 95  | 93  | 87  | 82 | 75 | 99  | 87  |
| 1600                       | 60   | 104               | 104 | 100 | 93  | 87 | 84 | 78 | 73 | 96  | 85  | 103                | 104 | 101 | 94  | 91  | 85  | 80 | 75 | 97  | 86  |
| 1600                       | 50   | 107               | 107 | 101 | 95  | 89 | 85 | 79 | 74 | 98  | 86  | 106                | 109 | 102 | 95  | 93  | 86  | 81 | 75 | 99  | 88  |
| 1600                       | 40   | 110               | 108 | 102 | 95  | 89 | 86 | 79 | 74 | 99  | 87  | 109                | 113 | 102 | 96  | 93  | 87  | 82 | 79 | 101 | 90  |
| 2182                       | 100  | 104               | 105 | 110 | 106 | 99 | 97 | 91 | 84 | 107 | 96  | 110                | 109 | 112 | 109 | 105 | 100 | 94 | 88 | 111 | 99  |
| 2182                       | 80   | 107               | 104 | 109 | 104 | 97 | 94 | 88 | 83 | 105 | 94  | 107                | 106 | 111 | 106 | 101 | 96  | 91 | 85 | 108 | 96  |
| 2182                       | 60   | 112               | 112 | 111 | 103 | 96 | 92 | 87 | 82 | 106 | 94  | 111                | 113 | 110 | 104 | 99  | 94  | 89 | 84 | 107 | 95  |
| 2182                       | 50   | 114               | 116 | 113 | 104 | 97 | 94 | 88 | 82 | 108 | 96  | 114                | 118 | 112 | 105 | 100 | 96  | 90 | 85 | 109 | 97  |
| 2182                       | 40   | 117               | 118 | 114 | 104 | 97 | 94 | 89 | 83 | 109 | 97  | 116                | 122 | 113 | 107 | 101 | 97  | 90 | 86 | 111 | 99  |

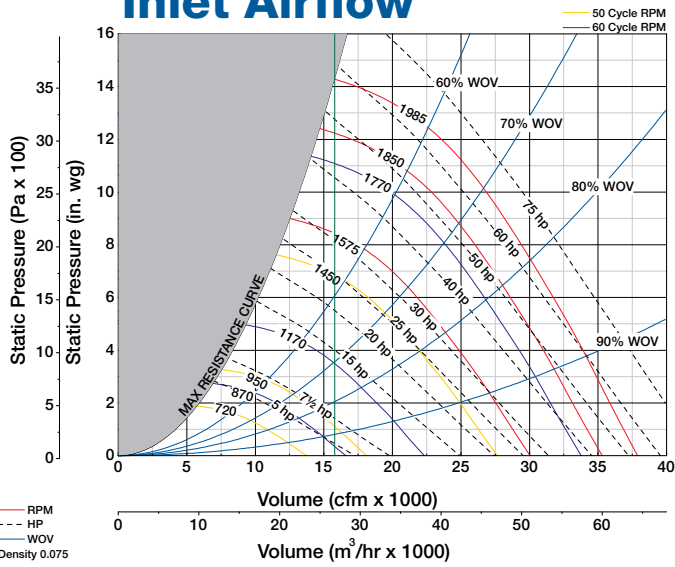
The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

# Vektor-CD Size 33

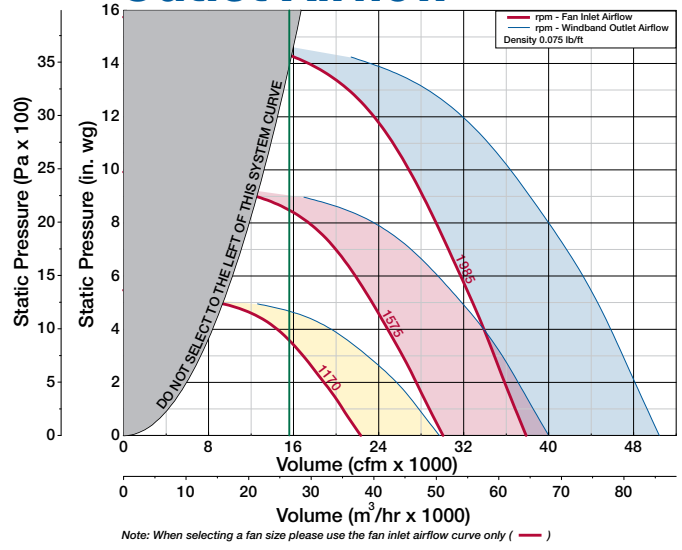
**AIR DATA**

**LV**  
Low Velocity

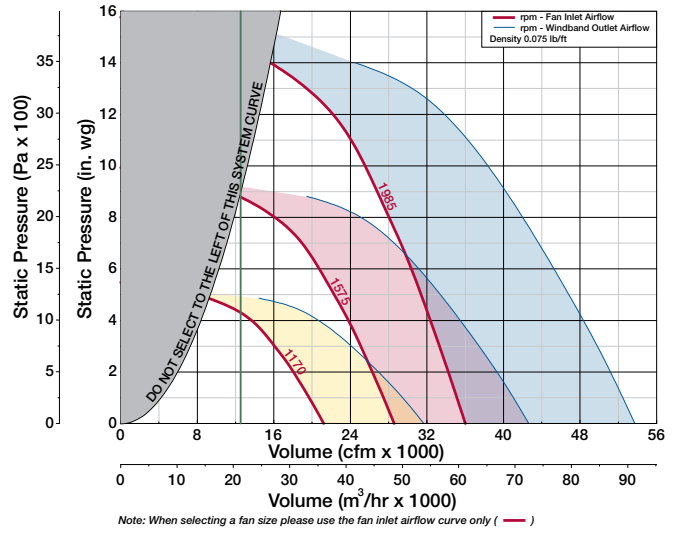
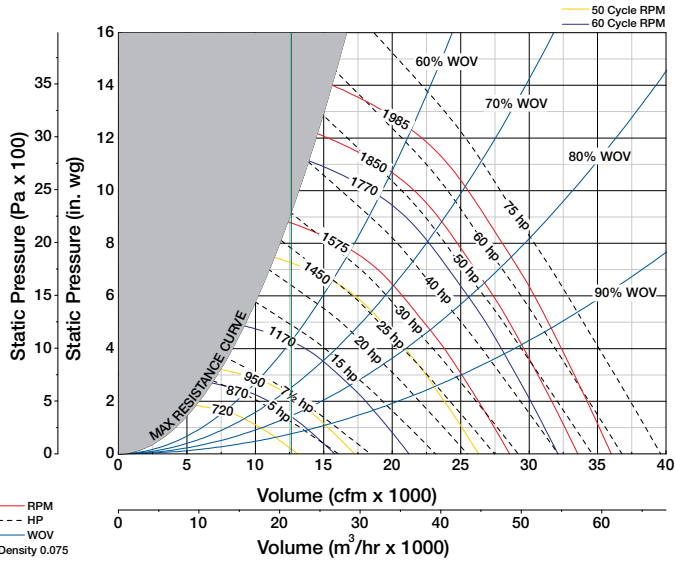
## Inlet Airflow



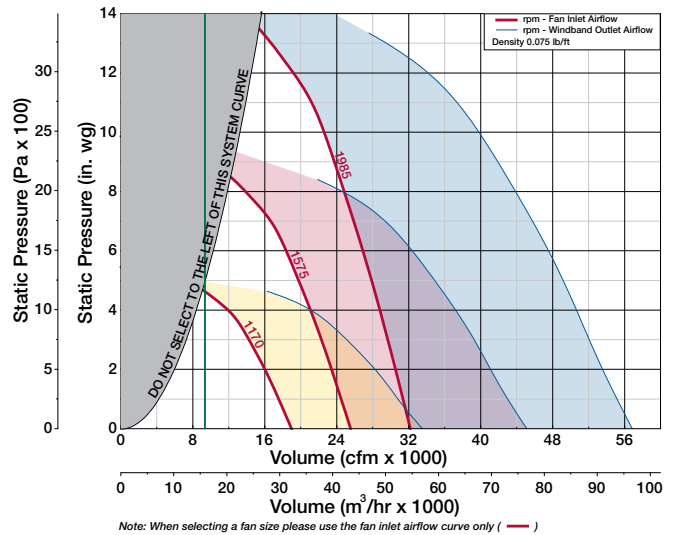
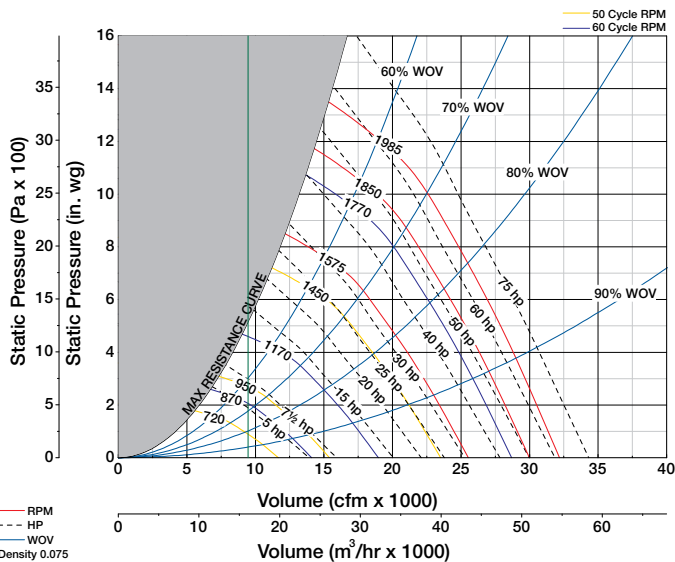
## Outlet Airflow



**MV**  
Medium Velocity



**HV**  
High Velocity



Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).

|   |
|---|
| 100% Wheel Width  |
| Windband Outlet Area = 10.04 ft <sup>2</sup>                      |
| Class II Fan Max rpm = 1575                                       |
| Class III Fan Max rpm = 1985                                      |
| Effective Plume @ 10 mph Crosswind Height {ft}                    |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.356)}{880} + 12.75$ |

| Performance Data             | LV   | MV   | HV   |
|------------------------------|--|--|--|
| Nozzle Velocity {ft/min}     | $\frac{\text{Fan cfm}}{5.26 \text{ ft}^2}$             | $\frac{\text{Fan cfm}}{4.21 \text{ ft}^2}$             | $\frac{\text{Fan cfm}}{3.16 \text{ ft}^2}$             |
| % WOV                        | $\frac{\text{cfm} \times 100}{\text{rpm} \times 19.1}$ | $\frac{\text{cfm} \times 100}{\text{rpm} \times 18.1}$ | $\frac{\text{cfm} \times 100}{\text{rpm} \times 16.2}$ |
| 3000 fpm: Inlet Airflow Rate | 15780 cfm  | 12630 cfm  | 9470 cfm   |

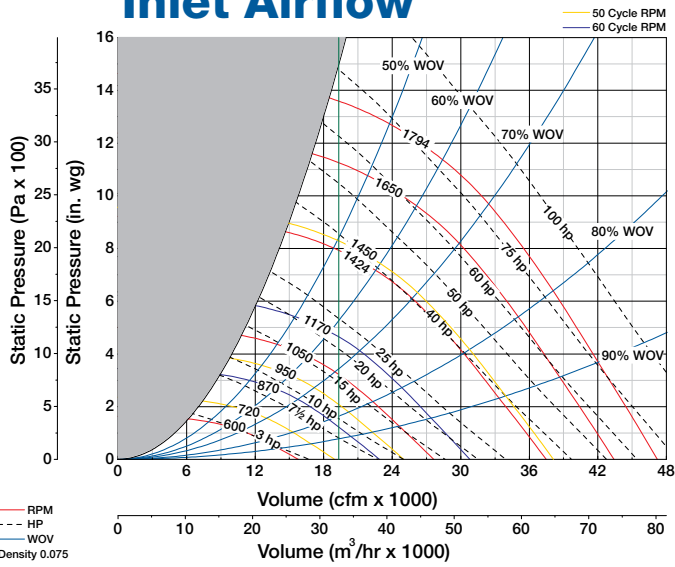
## Vektor-CD Size 33 (HV Nozzle)

| Sound Power by Octave Band |      |                   |     |     |     |    |    |    |    |     |     |                    |     |     |     |     |     |    |    |     |     |
|----------------------------|------|-------------------|-----|-----|-----|----|----|----|----|-----|-----|--------------------|-----|-----|-----|-----|-----|----|----|-----|-----|
| rpm                        | %WOV | Inlet Sound Power |     |     |     |    |    |    |    |     |     | Outlet Sound Power |     |     |     |     |     |    |    |     |     |
|                            |      | 1                 | 2   | 3   | 4   | 5  | 6  | 7  | 8  | LwA | dBA | 1                  | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA |
| 500                        | 100  | 87                | 84  | 77  | 69  | 64 | 56 | 48 | 42 | 74  | 62  | 86                 | 83  | 80  | 73  | 69  | 61  | 54 | 45 | 76  | 65  |
| 500                        | 80   | 85                | 80  | 73  | 66  | 62 | 54 | 47 | 42 | 70  | 59  | 85                 | 80  | 77  | 70  | 67  | 60  | 53 | 44 | 73  | 62  |
| 500                        | 60   | 83                | 76  | 70  | 63  | 59 | 53 | 45 | 39 | 67  | 56  | 82                 | 77  | 75  | 67  | 66  | 60  | 52 | 43 | 72  | 60  |
| 500                        | 50   | 85                | 77  | 71  | 64  | 59 | 53 | 46 | 39 | 68  | 57  | 83                 | 77  | 76  | 68  | 66  | 59  | 52 | 43 | 72  | 61  |
| 500                        | 40   | 86                | 78  | 72  | 63  | 59 | 53 | 46 | 40 | 69  | 57  | 84                 | 77  | 76  | 68  | 66  | 59  | 52 | 42 | 72  | 61  |
| 700                        | 100  | 86                | 90  | 82  | 77  | 73 | 66 | 60 | 54 | 80  | 69  | 86                 | 88  | 84  | 80  | 75  | 69  | 62 | 56 | 82  | 70  |
| 700                        | 80   | 83                | 88  | 79  | 73  | 70 | 63 | 57 | 54 | 77  | 66  | 86                 | 86  | 82  | 77  | 72  | 67  | 60 | 55 | 79  | 68  |
| 700                        | 60   | 88                | 87  | 78  | 71  | 68 | 62 | 56 | 53 | 76  | 65  | 86                 | 85  | 81  | 75  | 71  | 66  | 59 | 54 | 78  | 66  |
| 700                        | 50   | 91                | 87  | 79  | 73  | 69 | 63 | 57 | 53 | 77  | 66  | 90                 | 85  | 82  | 76  | 72  | 66  | 59 | 55 | 79  | 67  |
| 700                        | 40   | 91                | 88  | 79  | 73  | 69 | 63 | 57 | 54 | 77  | 66  | 92                 | 85  | 81  | 77  | 72  | 66  | 59 | 55 | 79  | 67  |
| 1000                       | 100  | 91                | 97  | 92  | 86  | 83 | 77 | 70 | 65 | 89  | 78  | 93                 | 97  | 93  | 90  | 86  | 80  | 73 | 66 | 92  | 80  |
| 1000                       | 80   | 89                | 94  | 89  | 83  | 81 | 74 | 68 | 64 | 87  | 75  | 89                 | 95  | 90  | 86  | 82  | 76  | 70 | 64 | 88  | 77  |
| 1000                       | 60   | 97                | 95  | 87  | 81  | 78 | 72 | 67 | 63 | 85  | 74  | 94                 | 94  | 87  | 83  | 80  | 75  | 69 | 64 | 86  | 75  |
| 1000                       | 50   | 99                | 97  | 89  | 83  | 79 | 74 | 68 | 64 | 87  | 75  | 98                 | 96  | 89  | 86  | 82  | 76  | 70 | 64 | 88  | 77  |
| 1000                       | 40   | 100               | 99  | 89  | 83  | 79 | 74 | 68 | 64 | 88  | 76  | 103                | 97  | 90  | 86  | 83  | 76  | 70 | 65 | 89  | 78  |
| 1400                       | 100  | 96                | 98  | 102 | 94  | 91 | 86 | 80 | 74 | 97  | 86  | 101                | 101 | 103 | 99  | 96  | 89  | 84 | 77 | 101 | 89  |
| 1400                       | 80   | 98                | 97  | 101 | 93  | 89 | 84 | 78 | 73 | 96  | 85  | 97                 | 100 | 102 | 95  | 92  | 86  | 81 | 74 | 98  | 87  |
| 1400                       | 60   | 104               | 103 | 99  | 92  | 87 | 82 | 77 | 73 | 95  | 84  | 103                | 102 | 100 | 93  | 90  | 84  | 79 | 74 | 96  | 85  |
| 1400                       | 50   | 107               | 106 | 99  | 93  | 88 | 84 | 78 | 73 | 96  | 85  | 107                | 108 | 100 | 95  | 92  | 85  | 80 | 75 | 98  | 87  |
| 1400                       | 40   | 110               | 107 | 100 | 94  | 89 | 84 | 78 | 74 | 97  | 86  | 112                | 110 | 101 | 95  | 92  | 86  | 81 | 79 | 100 | 88  |
| 1985                       | 100  | 105               | 106 | 111 | 105 | 99 | 97 | 90 | 84 | 107 | 96  | 111                | 110 | 113 | 108 | 105 | 100 | 94 | 88 | 110 | 99  |
| 1985                       | 80   | 108               | 105 | 110 | 103 | 97 | 94 | 88 | 83 | 105 | 94  | 108                | 107 | 112 | 105 | 101 | 96  | 91 | 85 | 108 | 96  |
| 1985                       | 60   | 113               | 113 | 111 | 103 | 96 | 93 | 87 | 82 | 106 | 95  | 112                | 113 | 110 | 103 | 99  | 94  | 89 | 84 | 106 | 95  |
| 1985                       | 50   | 115               | 116 | 112 | 104 | 97 | 94 | 88 | 83 | 107 | 96  | 115                | 119 | 112 | 105 | 101 | 96  | 90 | 85 | 109 | 98  |
| 1985                       | 40   | 119               | 118 | 114 | 104 | 98 | 95 | 89 | 83 | 109 | 98  | 117                | 123 | 113 | 106 | 101 | 96  | 91 | 86 | 111 | 99  |

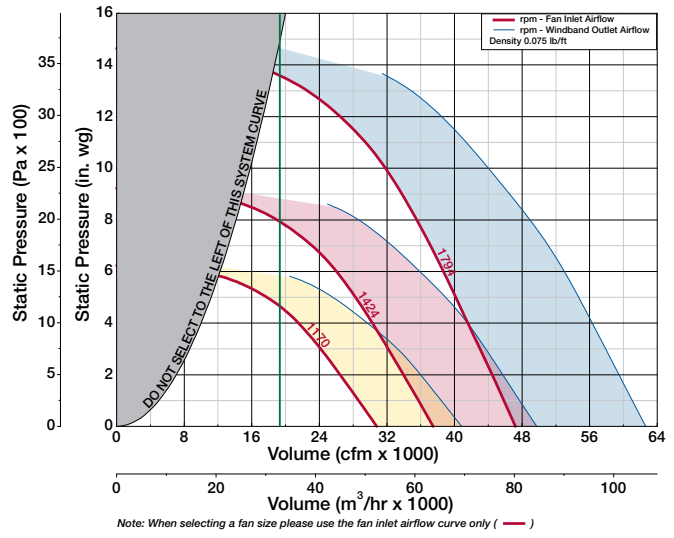
The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

# Vektor-CD Size 36

## Inlet Airflow



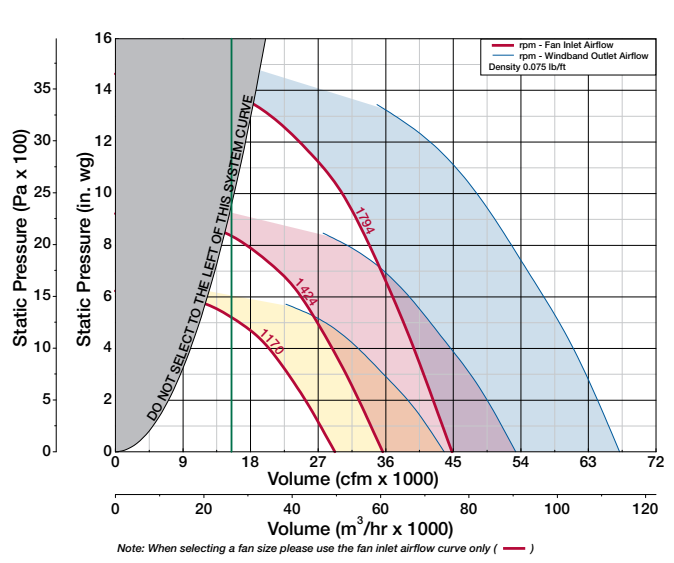
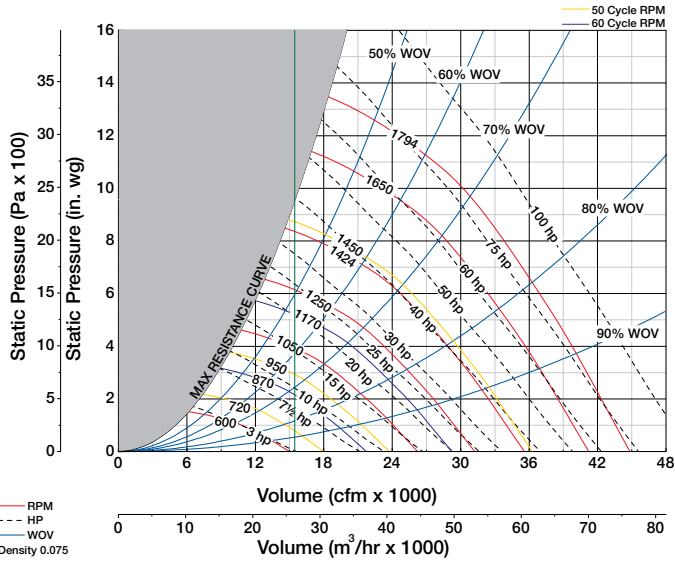
## Outlet Airflow



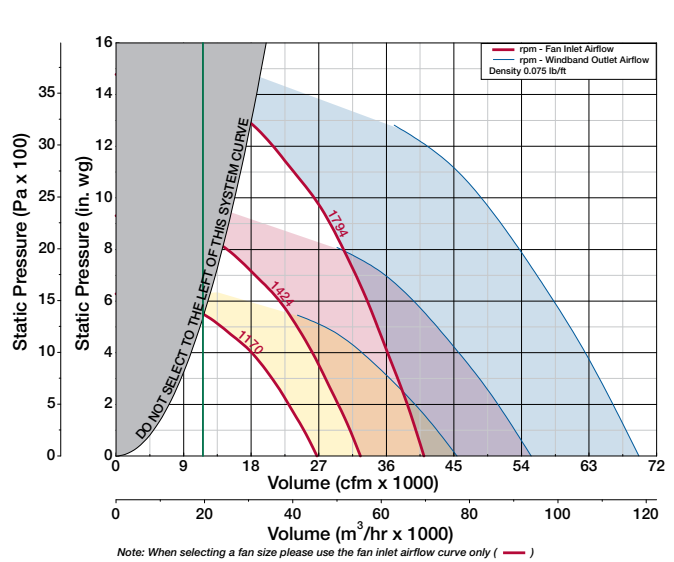
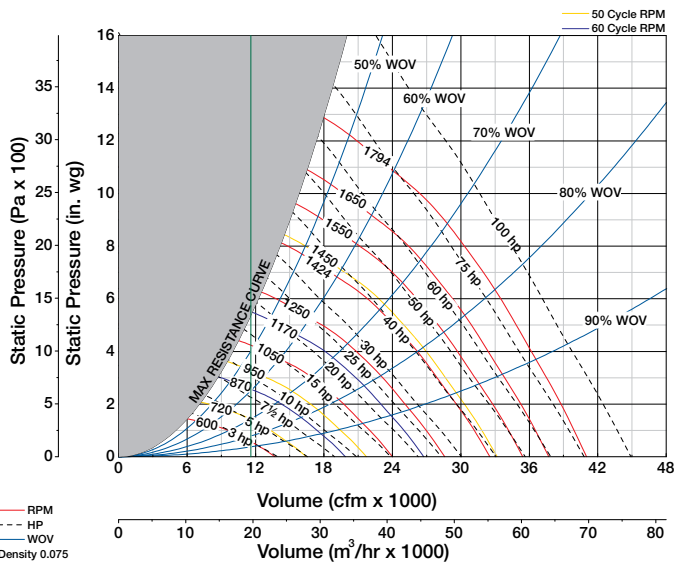
**AIR DATA**

**LV**  
Low Velocity

**MV**  
Medium Velocity



**HV**  
High Velocity



Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).

|   |
|---|
| 100% Wheel Width  |
| Windband Outlet Area = 12.31 ft <sup>2</sup>                      |
| Class II Fan Max rpm = 1424                                       |
| Class III Fan Max rpm = 1794                                      |
| Effective Plume @ 10 mph Crosswind Height {ft}                    |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.322)}{880} + 13.67$ |

| Performance Data             | LV                              | MV                              | HV                              |
|------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Nozzle Velocity {ft/min}     | Fan cfm<br>6.44 ft <sup>2</sup> | Fan cfm<br>5.15 ft <sup>2</sup> | Fan cfm<br>3.86 ft <sup>2</sup> |
| % WOV                        | cfm x 100<br>rpm x 26.4         | cfm x 100<br>rpm x 24.8         | cfm x 100<br>rpm x 22.7         |
| 3000 fpm: Inlet Airflow Rate | 19309 cfm                       | 15447 cfm                       | 11585 cfm                       |

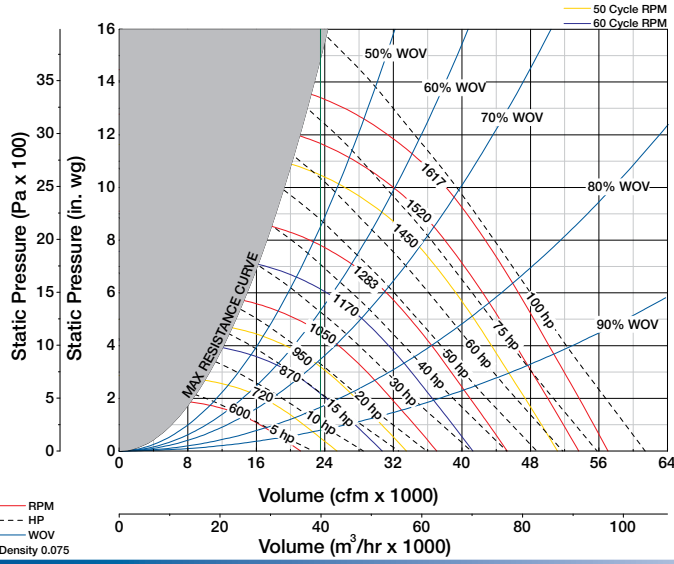
## Vektor-CD Size 36 (HV Nozzle)

| Sound Power by Octave Band |      |                   |     |     |     |     |    |     |    |     |     |                    |     |     |     |     |    |    |    |     |     |
|----------------------------|------|-------------------|-----|-----|-----|-----|----|-----|----|-----|-----|--------------------|-----|-----|-----|-----|----|----|----|-----|-----|
|                            |      | Inlet Sound Power |     |     |     |     |    |     |    |     |     | Outlet Sound Power |     |     |     |     |    |    |    |     |     |
| rpm                        | %WOV | 1                 | 2   | 3   | 4   | 5   | 6  | 7   | 8  | LwA | dBA | 1                  | 2   | 3   | 4   | 5   | 6  | 7  | 8  | LwA | dBA |
| 450                        | 100  | 85                | 82  | 74  | 68  | 65  | 59 | 54  | 45 | 72  | 61  | 84                 | 81  | 73  | 71  | 66  | 60 | 54 | 44 | 73  | 61  |
| 450                        | 80   | 85                | 81  | 73  | 67  | 64  | 57 | 53  | 43 | 71  | 60  | 81                 | 80  | 71  | 70  | 63  | 57 | 52 | 42 | 71  | 60  |
| 450                        | 60   | 82                | 78  | 72  | 66  | 63  | 57 | 53  | 43 | 70  | 58  | 82                 | 80  | 70  | 70  | 63  | 57 | 52 | 41 | 71  | 59  |
| 450                        | 50   | 83                | 79  | 72  | 66  | 61  | 56 | 52  | 42 | 70  | 58  | 81                 | 80  | 70  | 70  | 62  | 56 | 51 | 41 | 71  | 59  |
| 450                        | 40   | 83                | 79  | 72  | 66  | 61  | 55 | 52  | 42 | 69  | 58  | 81                 | 80  | 71  | 69  | 61  | 55 | 50 | 41 | 70  | 59  |
| 650                        | 100  | 88                | 94  | 83  | 76  | 74  | 71 | 65  | 60 | 82  | 71  | 86                 | 88  | 81  | 77  | 75  | 72 | 65 | 58 | 81  | 69  |
| 650                        | 80   | 86                | 92  | 82  | 75  | 73  | 68 | 64  | 57 | 81  | 69  | 86                 | 86  | 80  | 76  | 74  | 69 | 63 | 55 | 79  | 68  |
| 650                        | 60   | 85                | 89  | 80  | 73  | 72  | 68 | 64  | 57 | 79  | 67  | 86                 | 85  | 78  | 74  | 72  | 68 | 63 | 55 | 78  | 66  |
| 650                        | 50   | 87                | 89  | 79  | 73  | 71  | 67 | 63  | 56 | 78  | 67  | 89                 | 85  | 78  | 75  | 71  | 67 | 63 | 55 | 78  | 66  |
| 650                        | 40   | 89                | 89  | 81  | 74  | 71  | 66 | 63  | 56 | 79  | 67  | 90                 | 85  | 79  | 76  | 71  | 66 | 62 | 54 | 78  | 66  |
| 900                        | 100  | 90                | 101 | 93  | 85  | 83  | 82 | 76  | 70 | 91  | 79  | 90                 | 95  | 90  | 87  | 83  | 82 | 76 | 69 | 90  | 78  |
| 900                        | 80   | 88                | 99  | 91  | 83  | 81  | 80 | 74  | 69 | 89  | 77  | 89                 | 94  | 88  | 84  | 82  | 79 | 73 | 67 | 88  | 76  |
| 900                        | 60   | 89                | 97  | 89  | 82  | 81  | 78 | 74  | 69 | 88  | 76  | 89                 | 92  | 85  | 82  | 81  | 78 | 73 | 67 | 86  | 75  |
| 900                        | 50   | 92                | 97  | 89  | 81  | 80  | 77 | 73  | 68 | 87  | 76  | 94                 | 93  | 86  | 82  | 80  | 77 | 72 | 67 | 86  | 74  |
| 900                        | 40   | 96                | 98  | 91  | 83  | 80  | 76 | 72  | 67 | 88  | 77  | 99                 | 95  | 88  | 84  | 80  | 76 | 71 | 66 | 87  | 75  |
| 1300                       | 100  | 96                | 99  | 106 | 95  | 93  | 93 | 90  | 81 | 101 | 90  | 97                 | 100 | 105 | 95  | 93  | 92 | 89 | 79 | 101 | 89  |
| 1300                       | 80   | 96                | 98  | 104 | 94  | 92  | 90 | 88  | 79 | 99  | 88  | 94                 | 99  | 102 | 94  | 92  | 90 | 85 | 77 | 98  | 87  |
| 1300                       | 60   | 96                | 97  | 103 | 92  | 90  | 89 | 85  | 79 | 98  | 86  | 94                 | 98  | 100 | 91  | 89  | 88 | 84 | 77 | 96  | 85  |
| 1300                       | 50   | 100               | 100 | 102 | 92  | 90  | 87 | 84  | 79 | 97  | 86  | 100                | 101 | 100 | 91  | 89  | 87 | 83 | 77 | 96  | 85  |
| 1300                       | 40   | 104               | 103 | 103 | 93  | 90  | 86 | 82  | 77 | 98  | 86  | 104                | 106 | 100 | 94  | 90  | 87 | 82 | 76 | 98  | 86  |
| 1794                       | 100  | 101               | 107 | 113 | 104 | 101 | 99 | 100 | 91 | 109 | 97  | 100                | 109 | 112 | 103 | 101 | 99 | 98 | 90 | 108 | 97  |
| 1794                       | 80   | 99                | 106 | 111 | 102 | 99  | 97 | 97  | 89 | 107 | 95  | 95                 | 107 | 110 | 101 | 100 | 98 | 95 | 87 | 106 | 95  |
| 1794                       | 60   | 99                | 106 | 110 | 100 | 98  | 96 | 94  | 88 | 105 | 94  | 96                 | 106 | 109 | 99  | 98  | 96 | 94 | 87 | 105 | 93  |
| 1794                       | 50   | 103               | 110 | 110 | 100 | 97  | 96 | 93  | 88 | 105 | 94  | 100                | 111 | 109 | 99  | 97  | 95 | 93 | 87 | 105 | 93  |
| 1794                       | 40   | 106               | 114 | 111 | 102 | 97  | 95 | 92  | 86 | 106 | 95  | 103                | 116 | 110 | 102 | 99  | 95 | 92 | 86 | 107 | 95  |

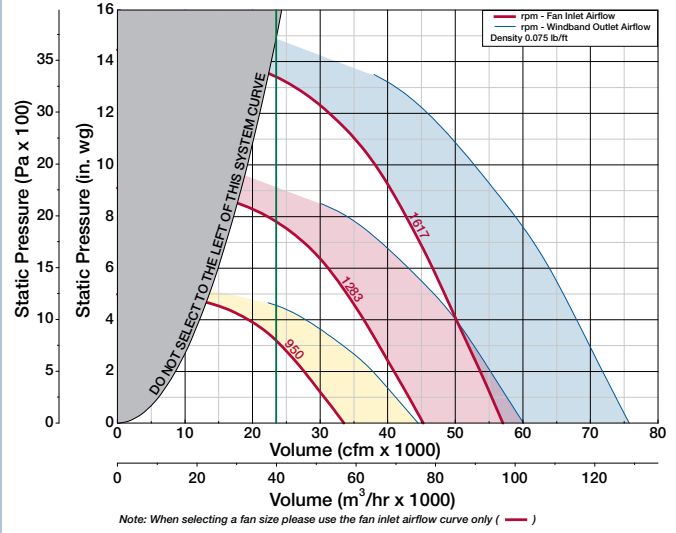
The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

# Vektor-CD Size 40

## Inlet Airflow



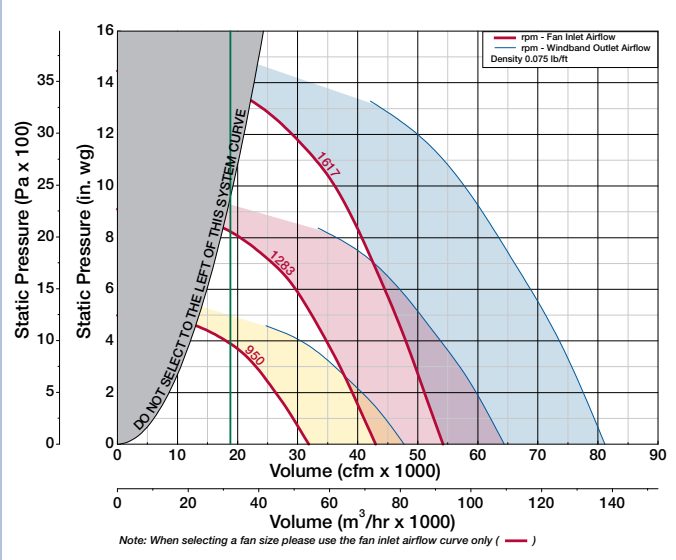
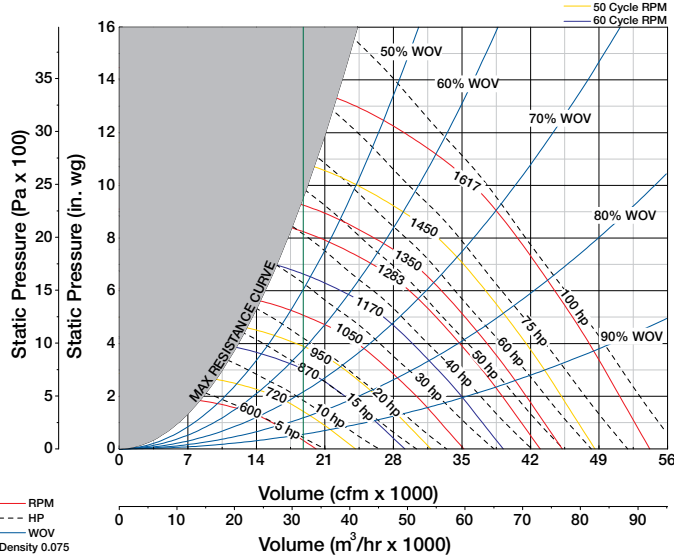
## Outlet Airflow



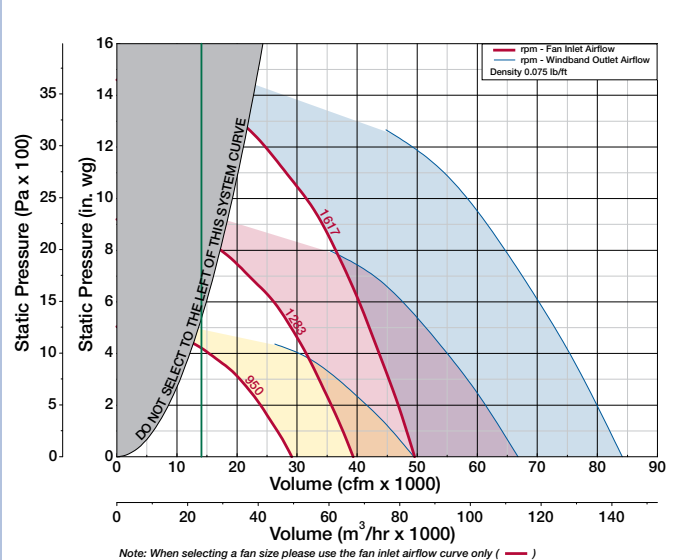
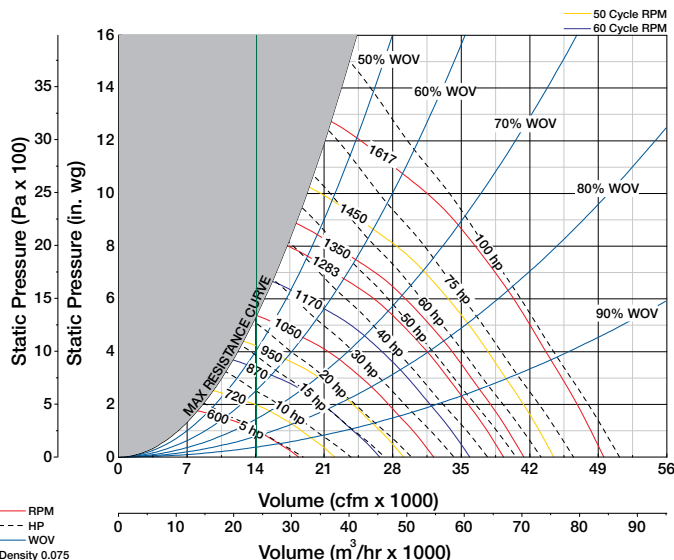
**AIR DATA**

**LV**  
Low Velocity

**MV**  
Medium Velocity



**HV**  
High Velocity



Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).

|   |
|---|
| 100% Wheel Width  |
| Windband Outlet Area = 14.92 ft <sup>2</sup>                      |
| Class II Fan Max rpm = 1283                                       |
| Class III Fan Max rpm = 1617                                      |
| Effective Plume @ 10 mph Crosswind Height {ft}                    |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.292)}{880} + 14.92$ |

| Performance Data             | LV   | MV   | HV   |
|------------------------------|--|--|--|
| Nozzle Velocity {ft/min}     | $\frac{\text{Fan cfm}}{7.83 \text{ ft}^2}$             | $\frac{\text{Fan cfm}}{6.26 \text{ ft}^2}$             | $\frac{\text{Fan cfm}}{4.70 \text{ ft}^2}$             |
| % WOV                        | $\frac{\text{cfm} \times 100}{\text{rpm} \times 35.3}$ | $\frac{\text{cfm} \times 100}{\text{rpm} \times 33.5}$ | $\frac{\text{cfm} \times 100}{\text{rpm} \times 30.7}$ |
| 3000 fpm: Inlet Airflow Rate | 23483 cfm  | 18786 cfm  | 14090 cfm  |

## Vektor-CD Size 40 (HV Nozzle)

| Sound Power by Octave Band |      |     |     |     |     |     |     |     |    |     |                    |     |     |     |     |     |    |    |    |     |     |
|----------------------------|------|-----|-----|-----|-----|-----|-----|-----|----|-----|--------------------|-----|-----|-----|-----|-----|----|----|----|-----|-----|
| Inlet Sound Power          |      |     |     |     |     |     |     |     |    |     | Outlet Sound Power |     |     |     |     |     |    |    |    |     |     |
| rpm                        | %WOV | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8  | LwA | dBA                | 1   | 2   | 3   | 4   | 5   | 6  | 7  | 8  | LwA | dBA |
| 400                        | 100  | 87  | 81  | 73  | 68  | 65  | 58  | 54  | 44 | 72  | 60                 | 86  | 79  | 72  | 71  | 66  | 59 | 53 | 42 | 72  | 61  |
| 400                        | 80   | 87  | 80  | 72  | 67  | 63  | 57  | 52  | 42 | 71  | 59                 | 83  | 79  | 71  | 69  | 63  | 57 | 51 | 40 | 71  | 59  |
| 400                        | 60   | 84  | 78  | 71  | 66  | 62  | 57  | 52  | 42 | 69  | 58                 | 83  | 79  | 70  | 69  | 62  | 57 | 51 | 40 | 70  | 59  |
| 400                        | 50   | 84  | 78  | 71  | 66  | 61  | 56  | 51  | 41 | 69  | 58                 | 82  | 78  | 70  | 69  | 61  | 56 | 50 | 40 | 70  | 58  |
| 400                        | 40   | 84  | 79  | 72  | 65  | 60  | 55  | 51  | 41 | 69  | 58                 | 83  | 79  | 71  | 69  | 61  | 55 | 49 | 39 | 70  | 59  |
| 600                        | 100  | 91  | 94  | 83  | 77  | 75  | 72  | 66  | 60 | 83  | 71                 | 89  | 87  | 81  | 78  | 76  | 72 | 65 | 59 | 81  | 70  |
| 600                        | 80   | 90  | 92  | 82  | 76  | 74  | 69  | 65  | 58 | 81  | 70                 | 88  | 85  | 80  | 77  | 74  | 69 | 64 | 55 | 79  | 68  |
| 600                        | 60   | 88  | 89  | 80  | 75  | 73  | 69  | 65  | 58 | 79  | 68                 | 88  | 84  | 78  | 75  | 73  | 69 | 64 | 55 | 78  | 67  |
| 600                        | 50   | 90  | 89  | 79  | 74  | 72  | 68  | 64  | 57 | 79  | 67                 | 91  | 85  | 78  | 75  | 72  | 68 | 63 | 55 | 78  | 67  |
| 600                        | 40   | 91  | 89  | 82  | 75  | 72  | 67  | 63  | 57 | 80  | 68                 | 91  | 85  | 79  | 77  | 72  | 67 | 62 | 55 | 79  | 67  |
| 800                        | 100  | 92  | 102 | 91  | 85  | 83  | 82  | 75  | 70 | 91  | 79                 | 92  | 96  | 89  | 87  | 83  | 82 | 75 | 69 | 90  | 78  |
| 800                        | 80   | 90  | 100 | 90  | 83  | 81  | 79  | 74  | 69 | 89  | 77                 | 91  | 95  | 87  | 85  | 82  | 79 | 72 | 66 | 88  | 76  |
| 800                        | 60   | 91  | 98  | 88  | 82  | 81  | 78  | 73  | 68 | 88  | 76                 | 90  | 93  | 85  | 82  | 81  | 78 | 72 | 66 | 86  | 75  |
| 800                        | 50   | 94  | 98  | 88  | 82  | 80  | 77  | 73  | 67 | 87  | 76                 | 96  | 93  | 86  | 83  | 80  | 77 | 72 | 66 | 86  | 75  |
| 800                        | 40   | 97  | 99  | 90  | 82  | 80  | 76  | 72  | 67 | 88  | 77                 | 100 | 94  | 88  | 84  | 80  | 76 | 71 | 65 | 87  | 75  |
| 1100                       | 100  | 96  | 104 | 101 | 94  | 92  | 93  | 87  | 79 | 99  | 88                 | 98  | 103 | 98  | 94  | 91  | 91 | 86 | 77 | 98  | 86  |
| 1100                       | 80   | 95  | 102 | 99  | 92  | 90  | 90  | 84  | 78 | 97  | 85                 | 96  | 101 | 96  | 93  | 91  | 89 | 82 | 75 | 96  | 85  |
| 1100                       | 60   | 95  | 101 | 97  | 91  | 89  | 88  | 82  | 78 | 95  | 84                 | 96  | 100 | 94  | 90  | 89  | 87 | 81 | 75 | 94  | 83  |
| 1100                       | 50   | 100 | 102 | 97  | 90  | 89  | 86  | 82  | 77 | 95  | 84                 | 101 | 100 | 94  | 90  | 88  | 86 | 81 | 75 | 94  | 82  |
| 1100                       | 40   | 103 | 103 | 98  | 91  | 88  | 85  | 80  | 76 | 95  | 84                 | 106 | 103 | 97  | 93  | 89  | 85 | 80 | 75 | 96  | 84  |
| 1617                       | 100  | 104 | 108 | 114 | 103 | 102 | 100 | 100 | 90 | 110 | 98                 | 102 | 110 | 114 | 103 | 102 | 99 | 99 | 90 | 109 | 98  |
| 1617                       | 80   | 103 | 107 | 113 | 101 | 100 | 98  | 97  | 89 | 108 | 96                 | 98  | 108 | 112 | 102 | 101 | 98 | 95 | 87 | 108 | 96  |
| 1617                       | 60   | 103 | 107 | 111 | 100 | 99  | 97  | 94  | 88 | 106 | 95                 | 98  | 107 | 110 | 99  | 98  | 96 | 94 | 87 | 105 | 94  |
| 1617                       | 50   | 107 | 111 | 111 | 100 | 98  | 96  | 93  | 88 | 106 | 95                 | 103 | 112 | 110 | 99  | 98  | 95 | 93 | 87 | 106 | 94  |
| 1617                       | 40   | 110 | 114 | 112 | 102 | 98  | 95  | 92  | 86 | 107 | 96                 | 106 | 117 | 111 | 102 | 100 | 95 | 92 | 86 | 108 | 96  |

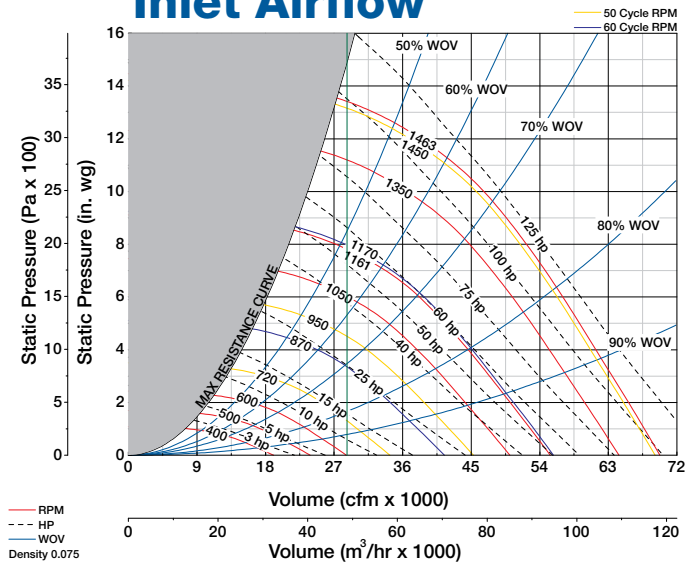
The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

# Vektor-CD Size 44

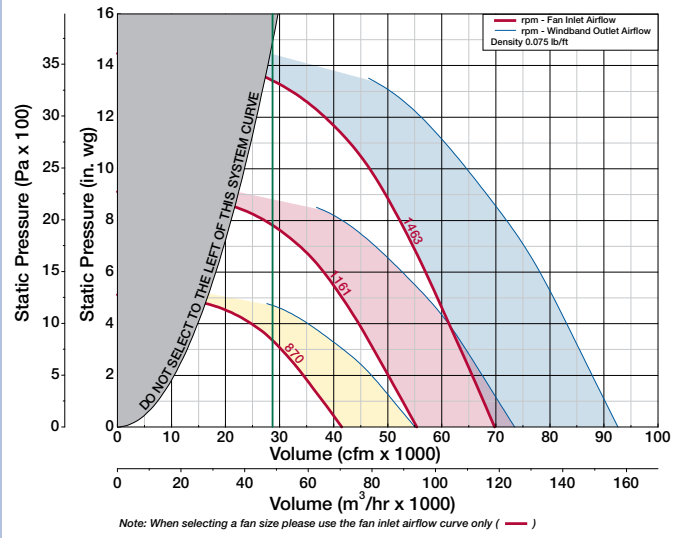
**AIR DATA**

**LV**  
Low Velocity

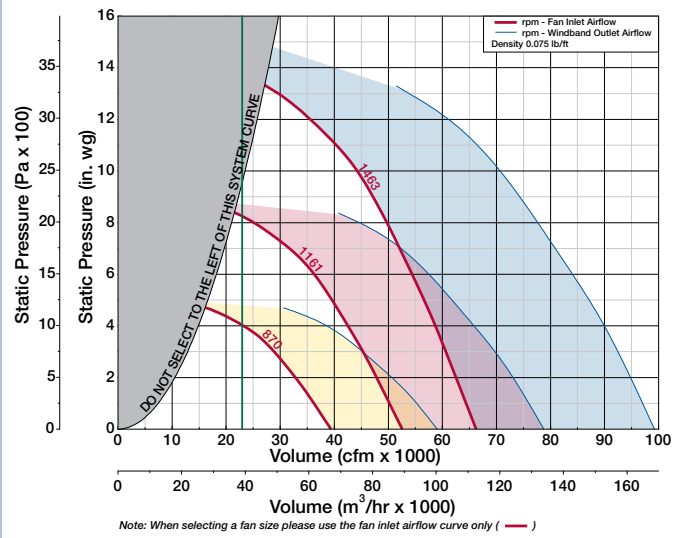
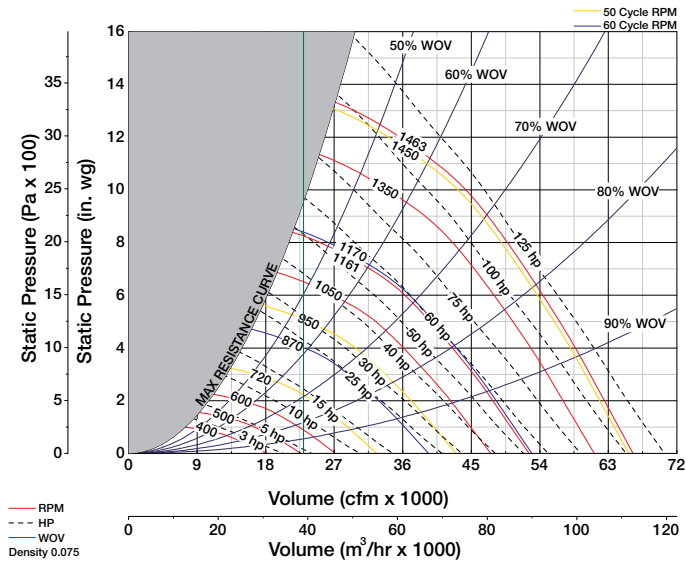
## Inlet Airflow



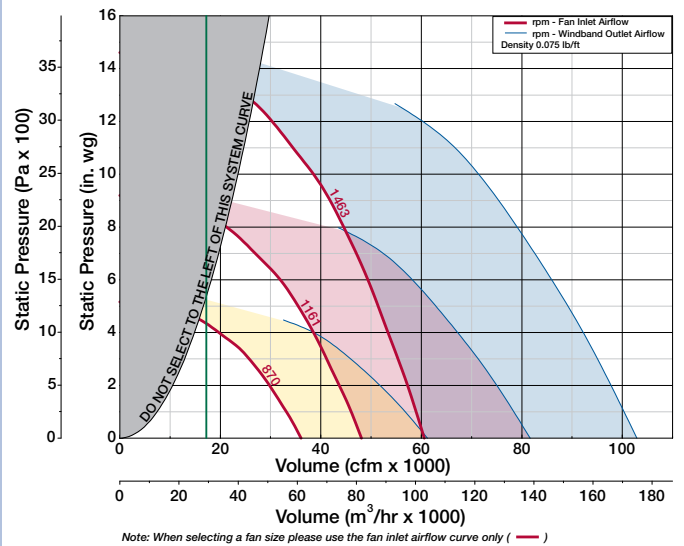
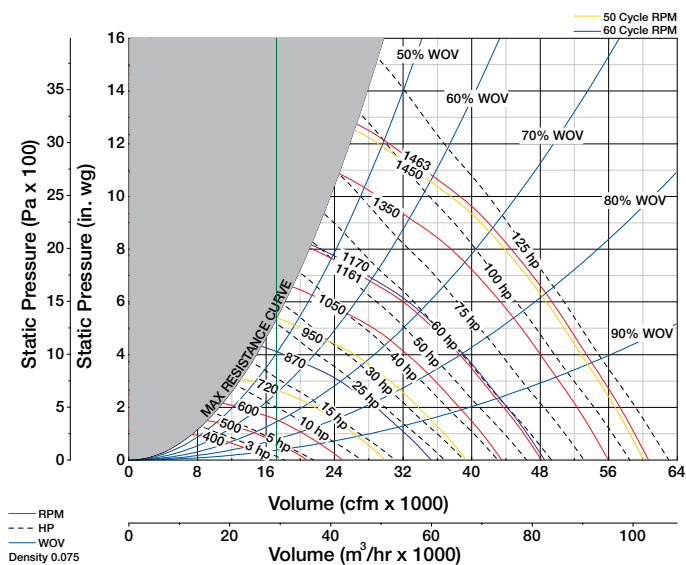
## Outlet Airflow



**MV**  
Medium Velocity



**HV**  
High Velocity



Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).



# Vektor-CD Size 44

AIR DATA

|   |
|---|
| 100% Wheel Width  |
| Windband Outlet Area = 18.28 ft <sup>2</sup>                      |
| Class II Fan Max rpm = 1161                                       |
| Class III Fan Max rpm = 1463                                      |
| Effective Plume @ 10 mph Crosswind Height {ft}                    |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.264)}{880} + 16.33$ |

| Performance Data             | LV   | MV   | HV   |
|------------------------------|--|--|--|
| Nozzle Velocity {ft/min}     | $\frac{\text{Fan cfm}}{9.57 \text{ ft}^2}$             | $\frac{\text{Fan cfm}}{7.65 \text{ ft}^2}$             | $\frac{\text{Fan cfm}}{5.74 \text{ ft}^2}$             |
| % WOV                        | $\frac{\text{cfm} \times 100}{\text{rpm} \times 47.7}$ | $\frac{\text{cfm} \times 100}{\text{rpm} \times 45.3}$ | $\frac{\text{cfm} \times 100}{\text{rpm} \times 41.4}$ |
| 3000 fpm: Inlet Airflow Rate | 28703 cfm  | 22962 cfm  | 17222 cfm  |

## Vektor-CD Size 44 (HV Nozzle)

| Sound Power by Octave Band |      |     |     |     |     |     |     |     |    |     |     |                    |     |     |     |     |     |    |    |     |     |
|----------------------------|------|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|--------------------|-----|-----|-----|-----|-----|----|----|-----|-----|
| Inlet Sound Power          |      |     |     |     |     |     |     |     |    |     |     | Outlet Sound Power |     |     |     |     |     |    |    |     |     |
| rpm                        | %WOV | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8  | LwA | dBA | 1                  | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA |
| 350                        | 100  | 87  | 80  | 71  | 68  | 64  | 57  | 52  | 42 | 71  | 59  | 86                 | 78  | 72  | 70  | 65  | 58  | 51 | 41 | 72  | 60  |
| 350                        | 80   | 86  | 79  | 70  | 67  | 62  | 57  | 51  | 41 | 70  | 58  | 83                 | 78  | 70  | 68  | 62  | 56  | 49 | 38 | 70  | 58  |
| 350                        | 60   | 83  | 77  | 69  | 66  | 61  | 57  | 50  | 40 | 69  | 57  | 84                 | 78  | 70  | 68  | 62  | 56  | 49 | 38 | 70  | 58  |
| 350                        | 50   | 83  | 77  | 69  | 65  | 60  | 56  | 49  | 40 | 68  | 56  | 82                 | 77  | 70  | 67  | 60  | 55  | 48 | 38 | 69  | 57  |
| 350                        | 40   | 84  | 78  | 70  | 64  | 59  | 55  | 49  | 40 | 68  | 57  | 83                 | 78  | 70  | 67  | 60  | 54  | 47 | 38 | 69  | 57  |
| 500                        | 100  | 93  | 88  | 79  | 75  | 74  | 69  | 64  | 57 | 80  | 68  | 89                 | 83  | 78  | 76  | 74  | 70  | 63 | 56 | 79  | 67  |
| 500                        | 80   | 92  | 87  | 78  | 75  | 72  | 67  | 62  | 55 | 78  | 67  | 88                 | 82  | 77  | 75  | 72  | 67  | 61 | 52 | 77  | 66  |
| 500                        | 60   | 89  | 84  | 76  | 74  | 71  | 67  | 63  | 55 | 77  | 65  | 87                 | 80  | 75  | 74  | 71  | 67  | 61 | 52 | 76  | 65  |
| 500                        | 50   | 90  | 84  | 76  | 73  | 70  | 66  | 62  | 54 | 76  | 65  | 90                 | 81  | 75  | 74  | 70  | 66  | 60 | 52 | 76  | 65  |
| 500                        | 40   | 91  | 85  | 78  | 73  | 70  | 65  | 61  | 54 | 77  | 65  | 90                 | 82  | 77  | 74  | 70  | 65  | 60 | 52 | 76  | 65  |
| 700                        | 100  | 95  | 101 | 90  | 85  | 83  | 81  | 74  | 69 | 90  | 79  | 93                 | 96  | 88  | 86  | 83  | 81  | 74 | 68 | 89  | 78  |
| 700                        | 80   | 93  | 100 | 89  | 83  | 81  | 79  | 73  | 68 | 89  | 77  | 91                 | 94  | 87  | 84  | 82  | 78  | 71 | 65 | 87  | 76  |
| 700                        | 60   | 92  | 97  | 87  | 82  | 81  | 77  | 73  | 67 | 87  | 76  | 90                 | 93  | 84  | 82  | 81  | 77  | 71 | 65 | 86  | 74  |
| 700                        | 50   | 95  | 97  | 87  | 81  | 80  | 76  | 72  | 66 | 87  | 75  | 95                 | 92  | 84  | 82  | 80  | 76  | 71 | 65 | 85  | 74  |
| 700                        | 40   | 97  | 98  | 89  | 82  | 79  | 75  | 71  | 66 | 87  | 76  | 100                | 93  | 86  | 83  | 80  | 75  | 70 | 64 | 86  | 74  |
| 1000                       | 100  | 98  | 105 | 99  | 94  | 93  | 94  | 86  | 79 | 100 | 88  | 100                | 104 | 98  | 95  | 92  | 92  | 85 | 78 | 99  | 87  |
| 1000                       | 80   | 97  | 104 | 97  | 93  | 91  | 91  | 84  | 78 | 98  | 86  | 97                 | 102 | 96  | 94  | 91  | 89  | 82 | 76 | 97  | 85  |
| 1000                       | 60   | 97  | 102 | 95  | 91  | 90  | 88  | 82  | 78 | 96  | 84  | 97                 | 100 | 93  | 91  | 89  | 87  | 81 | 75 | 94  | 83  |
| 1000                       | 50   | 101 | 103 | 95  | 91  | 89  | 87  | 82  | 78 | 95  | 84  | 102                | 100 | 93  | 91  | 89  | 86  | 81 | 75 | 94  | 83  |
| 1000                       | 40   | 105 | 103 | 97  | 91  | 89  | 85  | 81  | 76 | 95  | 84  | 107                | 102 | 96  | 93  | 89  | 86  | 80 | 75 | 96  | 84  |
| 1463                       | 100  | 105 | 109 | 114 | 104 | 102 | 101 | 100 | 90 | 110 | 98  | 106                | 110 | 114 | 104 | 102 | 100 | 99 | 89 | 110 | 98  |
| 1463                       | 80   | 105 | 108 | 112 | 102 | 100 | 99  | 97  | 89 | 108 | 96  | 102                | 108 | 112 | 103 | 101 | 99  | 95 | 87 | 108 | 96  |
| 1463                       | 60   | 105 | 108 | 111 | 101 | 99  | 97  | 94  | 88 | 106 | 95  | 102                | 108 | 110 | 100 | 98  | 97  | 94 | 87 | 106 | 94  |
| 1463                       | 50   | 109 | 111 | 111 | 101 | 99  | 96  | 94  | 88 | 106 | 95  | 107                | 112 | 110 | 100 | 98  | 96  | 93 | 87 | 106 | 94  |
| 1463                       | 40   | 112 | 115 | 111 | 102 | 99  | 95  | 92  | 87 | 107 | 95  | 111                | 117 | 111 | 102 | 100 | 96  | 92 | 86 | 108 | 96  |

SOUND DATA

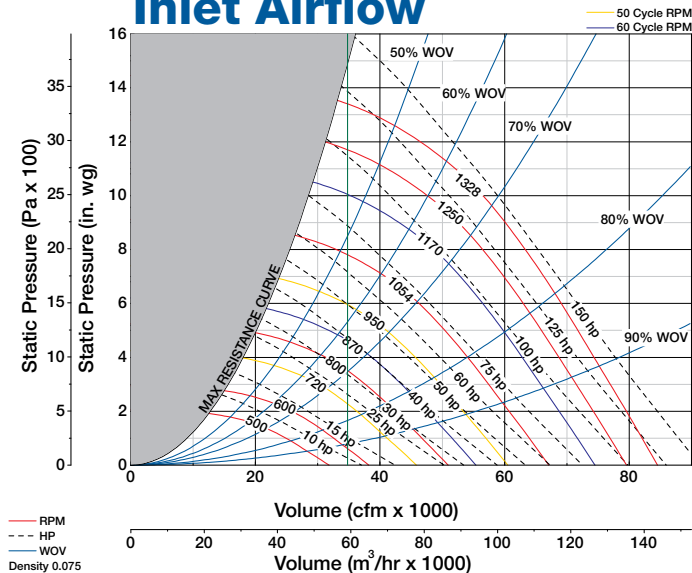
The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

# Vektor-CD Size 49

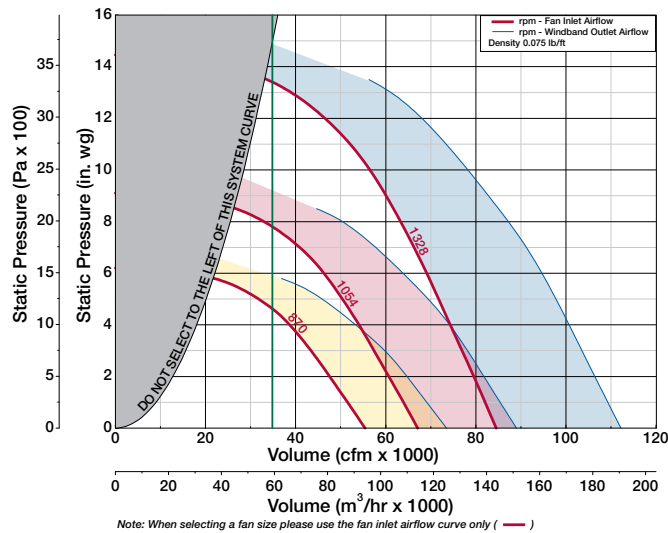
**AIR DATA**

**LV**  
Low Velocity

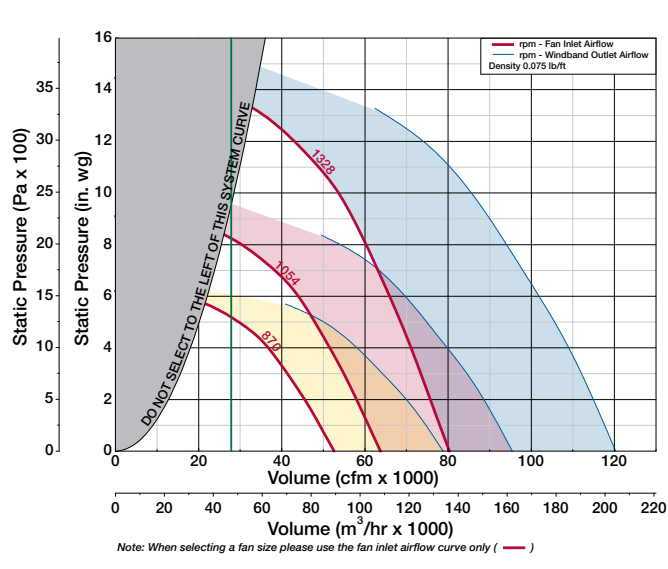
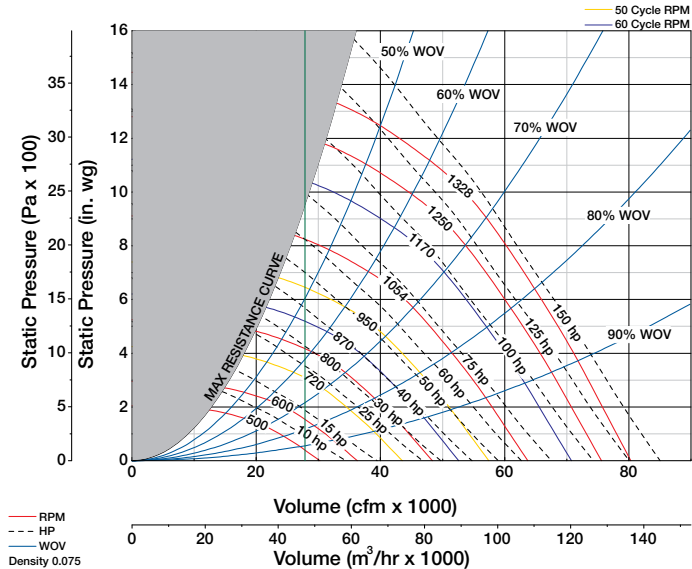
## Inlet Airflow



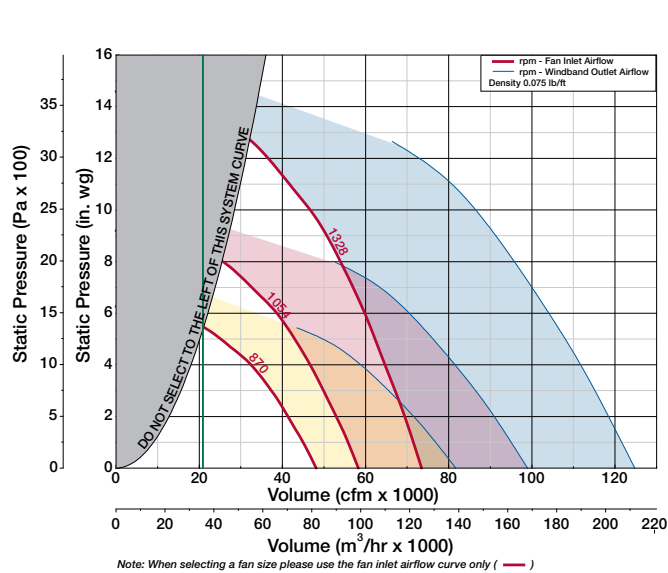
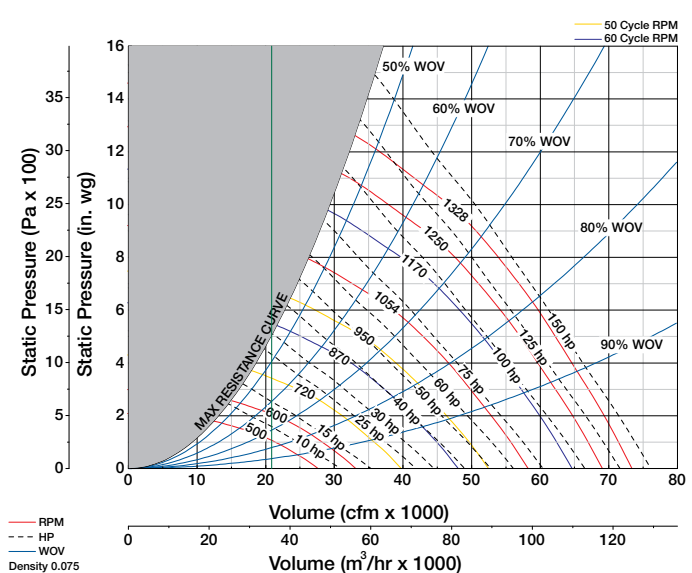
## Outlet Airflow



**MV**  
Medium Velocity



**HV**  
High Velocity



Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).

# Vektor-CD Size 49

|   |
|---|
| 100% Wheel Width  |
| Windband Outlet Area = 22.13 ft <sup>2</sup>                      |
| Class II Fan Max rpm = 1054                                       |
| Class III Fan Max rpm = 1328                                      |
| Effective Plume @ 10 mph Crosswind Height {ft}                    |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.240)}{880} + 17.75$ |

| Performance Data             | LV   | MV   | HV   |
|------------------------------|--|--|--|
| Nozzle Velocity {ft/min}     | Fan cfm<br>11.60 ft <sup>2</sup>                       | Fan cfm<br>9.28 ft <sup>2</sup>                        | Fan cfm<br>6.96 ft <sup>2</sup>                        |
| % WOV                        | $\frac{\text{cfm} \times 100}{\text{rpm} \times 63.7}$ | $\frac{\text{cfm} \times 100}{\text{rpm} \times 60.5}$ | $\frac{\text{cfm} \times 100}{\text{rpm} \times 55.3}$ |
| 3000 fpm: Inlet Airflow Rate | 34800 cfm  | 27840 cfm  | 20880 cfm  |

## Vektor-CD Size 49 (HV Nozzle)

| Sound Power by Octave Band |      |                   |     |     |     |     |     |     |    |     |     |                    |     |     |     |     |     |    |    |     |     |
|----------------------------|------|-------------------|-----|-----|-----|-----|-----|-----|----|-----|-----|--------------------|-----|-----|-----|-----|-----|----|----|-----|-----|
|                            |      | Inlet Sound Power |     |     |     |     |     |     |    |     |     | Outlet Sound Power |     |     |     |     |     |    |    |     |     |
| rpm                        | %WOV | 1                 | 2   | 3   | 4   | 5   | 6   | 7   | 8  | LwA | dBA | 1                  | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA |
| 350                        | 100  | 90                | 83  | 74  | 71  | 67  | 60  | 55  | 45 | 74  | 62  | 89                 | 82  | 75  | 73  | 68  | 61  | 54 | 44 | 75  | 63  |
| 350                        | 80   | 90                | 82  | 73  | 70  | 65  | 60  | 54  | 43 | 73  | 61  | 86                 | 82  | 73  | 71  | 65  | 59  | 52 | 41 | 73  | 61  |
| 350                        | 60   | 87                | 81  | 72  | 69  | 64  | 60  | 53  | 43 | 72  | 60  | 87                 | 81  | 73  | 71  | 64  | 59  | 52 | 41 | 73  | 61  |
| 350                        | 50   | 87                | 81  | 72  | 68  | 63  | 59  | 52  | 43 | 71  | 60  | 86                 | 80  | 73  | 70  | 63  | 58  | 51 | 41 | 72  | 60  |
| 350                        | 40   | 87                | 81  | 73  | 67  | 62  | 58  | 52  | 43 | 71  | 60  | 86                 | 81  | 73  | 70  | 63  | 57  | 50 | 41 | 72  | 60  |
| 500                        | 100  | 97                | 92  | 82  | 78  | 77  | 72  | 67  | 60 | 83  | 71  | 93                 | 86  | 81  | 79  | 77  | 73  | 66 | 59 | 82  | 70  |
| 500                        | 80   | 95                | 90  | 81  | 78  | 75  | 70  | 65  | 58 | 81  | 70  | 91                 | 85  | 80  | 78  | 75  | 70  | 64 | 55 | 80  | 69  |
| 500                        | 60   | 93                | 87  | 79  | 76  | 74  | 70  | 65  | 58 | 80  | 68  | 91                 | 84  | 78  | 77  | 74  | 70  | 64 | 55 | 79  | 68  |
| 500                        | 50   | 93                | 87  | 79  | 75  | 73  | 69  | 65  | 57 | 79  | 68  | 93                 | 85  | 78  | 77  | 73  | 69  | 63 | 55 | 79  | 68  |
| 500                        | 40   | 94                | 89  | 81  | 76  | 72  | 68  | 64  | 57 | 80  | 68  | 93                 | 86  | 80  | 77  | 72  | 68  | 63 | 55 | 79  | 68  |
| 700                        | 100  | 98                | 105 | 93  | 88  | 86  | 84  | 77  | 72 | 94  | 82  | 96                 | 99  | 92  | 89  | 86  | 84  | 77 | 71 | 92  | 81  |
| 700                        | 80   | 96                | 103 | 92  | 86  | 84  | 82  | 76  | 71 | 92  | 80  | 94                 | 98  | 90  | 87  | 85  | 80  | 74 | 68 | 90  | 79  |
| 700                        | 60   | 96                | 101 | 90  | 85  | 83  | 80  | 76  | 70 | 90  | 79  | 94                 | 96  | 87  | 85  | 84  | 80  | 74 | 68 | 89  | 77  |
| 700                        | 50   | 98                | 101 | 90  | 84  | 82  | 79  | 75  | 69 | 90  | 78  | 99                 | 96  | 87  | 85  | 83  | 79  | 74 | 68 | 88  | 77  |
| 700                        | 40   | 101               | 102 | 92  | 85  | 82  | 78  | 74  | 69 | 91  | 79  | 103                | 97  | 89  | 86  | 82  | 78  | 73 | 67 | 89  | 77  |
| 900                        | 100  | 99                | 105 | 97  | 95  | 93  | 94  | 85  | 80 | 99  | 88  | 101                | 104 | 97  | 95  | 92  | 92  | 84 | 78 | 98  | 87  |
| 900                        | 80   | 98                | 104 | 96  | 93  | 91  | 91  | 83  | 78 | 97  | 86  | 98                 | 102 | 95  | 94  | 92  | 89  | 81 | 76 | 97  | 85  |
| 900                        | 60   | 97                | 102 | 94  | 92  | 90  | 88  | 82  | 78 | 96  | 84  | 98                 | 101 | 92  | 92  | 90  | 88  | 81 | 75 | 95  | 84  |
| 900                        | 50   | 102               | 103 | 94  | 91  | 89  | 87  | 82  | 78 | 95  | 84  | 103                | 101 | 92  | 91  | 89  | 87  | 81 | 75 | 95  | 83  |
| 900                        | 40   | 105               | 103 | 96  | 92  | 89  | 86  | 80  | 77 | 95  | 84  | 108                | 102 | 96  | 93  | 89  | 86  | 80 | 75 | 96  | 84  |
| 1328                       | 100  | 107               | 110 | 116 | 104 | 103 | 102 | 100 | 90 | 111 | 99  | 109                | 111 | 117 | 105 | 102 | 101 | 99 | 89 | 111 | 100 |
| 1328                       | 80   | 107               | 109 | 114 | 103 | 101 | 100 | 97  | 89 | 109 | 98  | 105                | 110 | 114 | 104 | 101 | 100 | 94 | 87 | 109 | 98  |
| 1328                       | 60   | 107               | 109 | 112 | 101 | 100 | 98  | 94  | 89 | 107 | 96  | 105                | 109 | 112 | 101 | 99  | 98  | 93 | 87 | 107 | 95  |
| 1328                       | 50   | 111               | 112 | 112 | 101 | 99  | 97  | 94  | 88 | 107 | 96  | 111                | 113 | 112 | 100 | 98  | 97  | 93 | 87 | 107 | 95  |
| 1328                       | 40   | 114               | 115 | 112 | 102 | 99  | 96  | 92  | 87 | 107 | 96  | 115                | 118 | 112 | 103 | 100 | 96  | 92 | 86 | 108 | 97  |

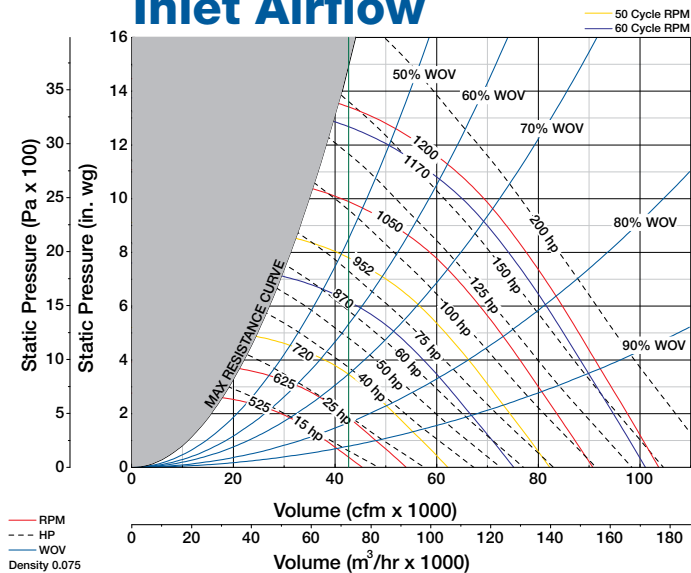
The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

# Vektor-CD Size 54

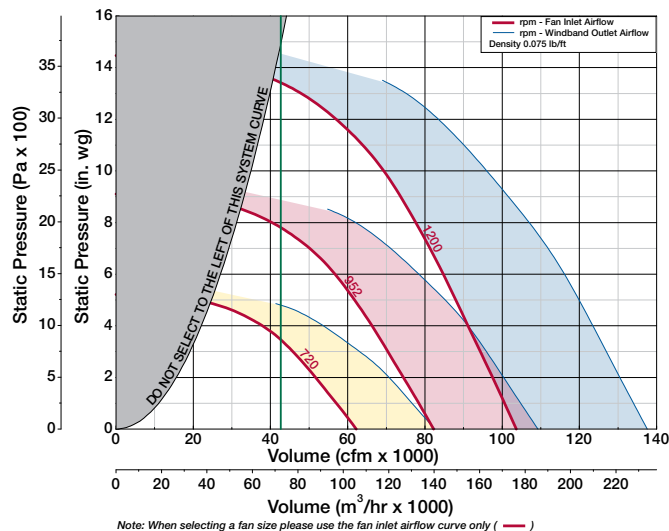
**AIR DATA**

**LV**  
Low Velocity

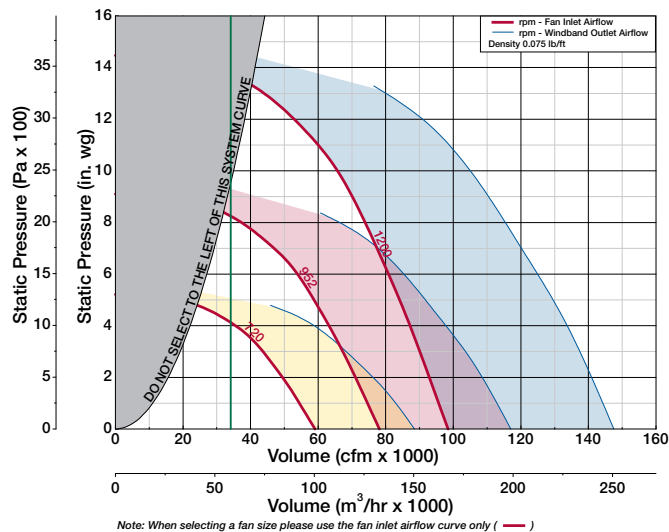
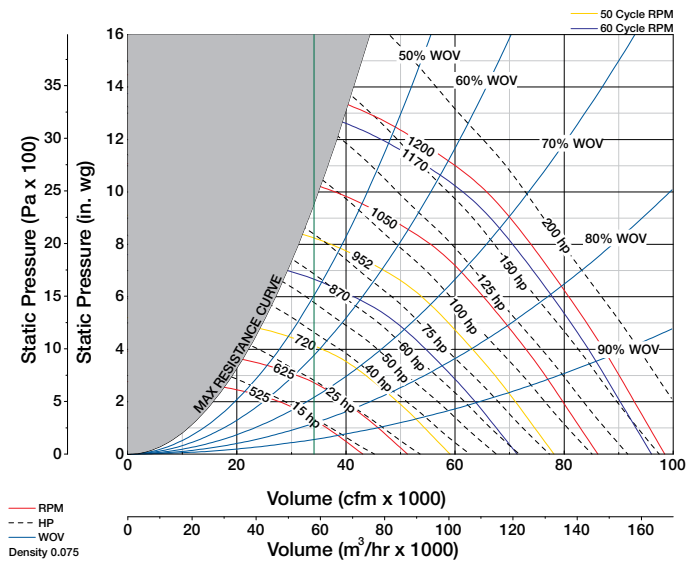
## Inlet Airflow



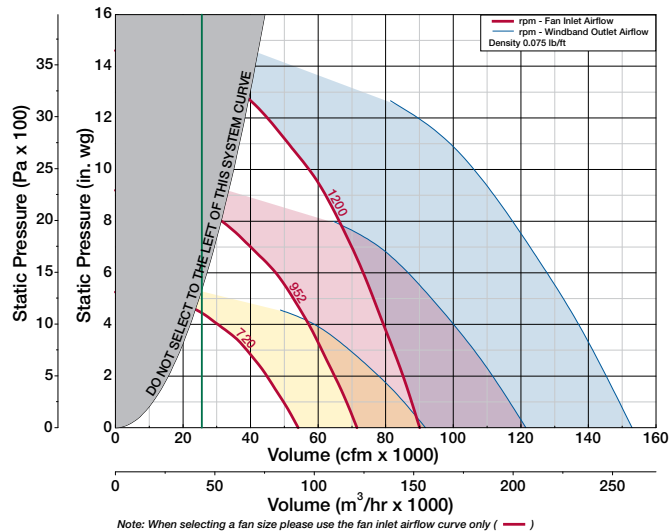
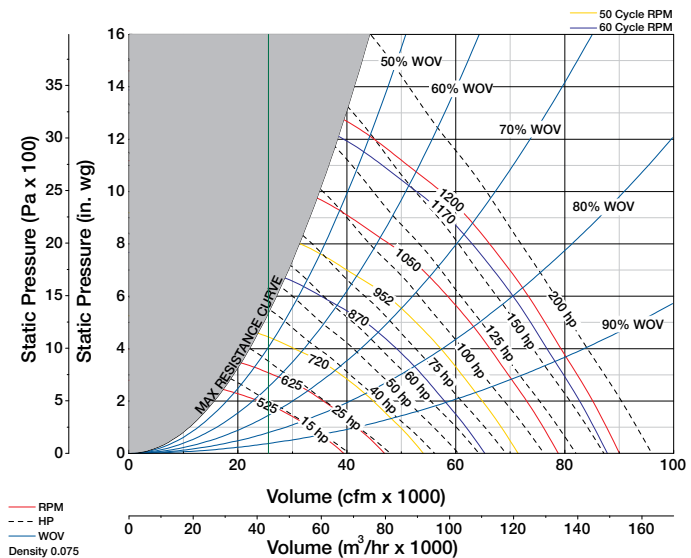
## Outlet Airflow



**MV**  
Medium Velocity



**HV**  
High Velocity



Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).

# Vektor-CD Size 54

|  |
|--|
| 100% Wheel Width   |
| Windband Outlet Area = 27.11 ft <sup>2</sup>                     |
| Class II Fan Max rpm = 952                                       |
| Class III Fan Max rpm = 1200                                     |
| Effective Plume @ 10 mph Crosswind Height {ft}                   |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.217)}{880} + 19.5$ |

| Performance Data             | LV   | MV   | HV   |
|------------------------------|--|--|--|
| Nozzle Velocity {ft/min}     | $\frac{\text{Fan cfm}}{14.22 \text{ ft}^2}$            | $\frac{\text{Fan cfm}}{11.38 \text{ ft}^2}$            | $\frac{\text{Fan cfm}}{8.53 \text{ ft}^2}$             |
| % WOV                        | $\frac{\text{cfm} \times 100}{\text{rpm} \times 86.4}$ | $\frac{\text{cfm} \times 100}{\text{rpm} \times 82.1}$ | $\frac{\text{cfm} \times 100}{\text{rpm} \times 75.1}$ |
| 3000 fpm: Inlet Airflow Rate | 42656 cfm  | 34140 cfm  | 25594 cfm  |

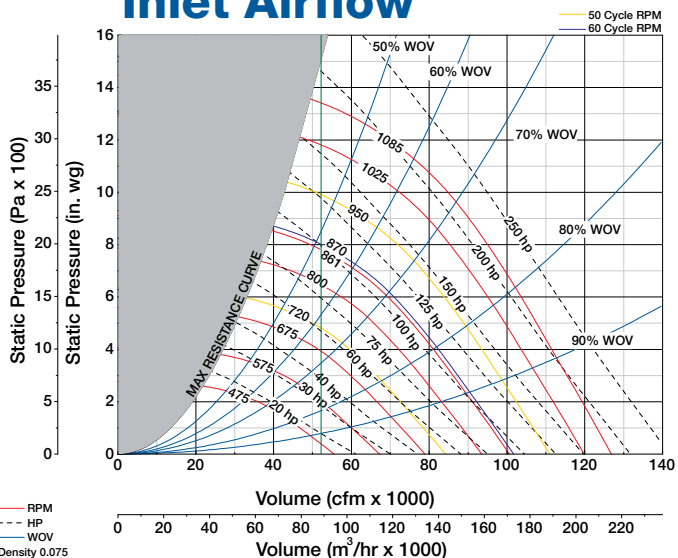
## Vektor-CD Size 54 (HV Nozzle)

| Sound Power by Octave Band |      |                   |     |     |     |     |     |    |    |     |     |                    |     |     |     |     |     |    |    |     |     |
|----------------------------|------|-------------------|-----|-----|-----|-----|-----|----|----|-----|-----|--------------------|-----|-----|-----|-----|-----|----|----|-----|-----|
|                            |      | Inlet Sound Power |     |     |     |     |     |    |    |     |     | Outlet Sound Power |     |     |     |     |     |    |    |     |     |
| rpm                        | %WOV | 1                 | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA | 1                  | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA |
| 300                        | 100  | 89                | 81  | 72  | 70  | 65  | 59  | 53 | 43 | 72  | 61  | 88                 | 79  | 74  | 71  | 66  | 59  | 52 | 42 | 73  | 61  |
| 300                        | 80   | 89                | 80  | 71  | 69  | 63  | 59  | 51 | 42 | 71  | 60  | 86                 | 78  | 73  | 69  | 63  | 58  | 50 | 39 | 71  | 60  |
| 300                        | 60   | 85                | 78  | 70  | 68  | 62  | 59  | 51 | 41 | 70  | 58  | 87                 | 77  | 73  | 68  | 63  | 58  | 49 | 39 | 71  | 59  |
| 300                        | 50   | 85                | 78  | 70  | 66  | 61  | 58  | 49 | 41 | 69  | 58  | 85                 | 77  | 73  | 68  | 62  | 57  | 48 | 39 | 70  | 59  |
| 300                        | 40   | 86                | 79  | 71  | 66  | 61  | 57  | 49 | 41 | 70  | 58  | 86                 | 78  | 73  | 68  | 61  | 56  | 48 | 39 | 70  | 59  |
| 400                        | 100  | 95                | 86  | 78  | 76  | 74  | 68  | 63 | 57 | 79  | 68  | 90                 | 83  | 79  | 76  | 75  | 68  | 62 | 55 | 79  | 68  |
| 400                        | 80   | 93                | 84  | 77  | 76  | 72  | 67  | 61 | 54 | 78  | 67  | 88                 | 82  | 78  | 76  | 72  | 66  | 60 | 51 | 78  | 66  |
| 400                        | 60   | 91                | 82  | 75  | 74  | 71  | 67  | 61 | 55 | 77  | 65  | 87                 | 80  | 76  | 75  | 71  | 66  | 60 | 51 | 76  | 65  |
| 400                        | 50   | 91                | 82  | 74  | 73  | 69  | 66  | 60 | 54 | 76  | 64  | 90                 | 81  | 76  | 74  | 70  | 66  | 59 | 51 | 76  | 65  |
| 400                        | 40   | 91                | 84  | 76  | 73  | 69  | 65  | 60 | 54 | 76  | 64  | 89                 | 82  | 78  | 74  | 69  | 65  | 58 | 51 | 76  | 65  |
| 600                        | 100  | 101               | 102 | 91  | 87  | 86  | 82  | 75 | 71 | 92  | 80  | 97                 | 97  | 90  | 88  | 86  | 83  | 75 | 69 | 91  | 80  |
| 600                        | 80   | 100               | 101 | 89  | 85  | 84  | 80  | 74 | 69 | 90  | 79  | 96                 | 95  | 89  | 86  | 84  | 79  | 73 | 66 | 89  | 77  |
| 600                        | 60   | 98                | 98  | 87  | 84  | 83  | 79  | 74 | 69 | 89  | 77  | 95                 | 93  | 86  | 85  | 83  | 78  | 73 | 66 | 88  | 76  |
| 600                        | 50   | 100               | 98  | 87  | 84  | 82  | 78  | 74 | 68 | 88  | 77  | 98                 | 93  | 86  | 84  | 82  | 78  | 73 | 66 | 87  | 76  |
| 600                        | 40   | 101               | 99  | 89  | 84  | 81  | 77  | 73 | 67 | 89  | 77  | 102                | 94  | 87  | 85  | 81  | 77  | 72 | 65 | 87  | 76  |
| 850                        | 100  | 101               | 108 | 98  | 97  | 95  | 96  | 86 | 81 | 101 | 90  | 103                | 107 | 98  | 97  | 94  | 94  | 85 | 79 | 100 | 89  |
| 850                        | 80   | 100               | 106 | 97  | 95  | 93  | 93  | 84 | 80 | 99  | 88  | 101                | 105 | 97  | 96  | 93  | 90  | 83 | 77 | 99  | 87  |
| 850                        | 60   | 100               | 105 | 95  | 94  | 92  | 90  | 84 | 80 | 98  | 86  | 101                | 104 | 94  | 93  | 91  | 89  | 82 | 77 | 97  | 85  |
| 850                        | 50   | 104               | 105 | 95  | 93  | 91  | 89  | 83 | 80 | 97  | 85  | 105                | 103 | 94  | 93  | 91  | 88  | 82 | 77 | 96  | 85  |
| 850                        | 40   | 107               | 106 | 97  | 93  | 90  | 87  | 82 | 78 | 97  | 85  | 111                | 104 | 97  | 95  | 91  | 87  | 82 | 76 | 97  | 86  |
| 1200                       | 100  | 109               | 113 | 114 | 105 | 103 | 103 | 99 | 91 | 111 | 99  | 111                | 114 | 114 | 105 | 103 | 102 | 98 | 89 | 110 | 99  |
| 1200                       | 80   | 108               | 112 | 112 | 104 | 102 | 101 | 97 | 89 | 109 | 97  | 108                | 112 | 111 | 104 | 102 | 100 | 94 | 87 | 108 | 97  |
| 1200                       | 60   | 108               | 111 | 110 | 102 | 100 | 99  | 94 | 89 | 107 | 95  | 108                | 111 | 109 | 101 | 100 | 98  | 93 | 87 | 106 | 95  |
| 1200                       | 50   | 112               | 113 | 110 | 102 | 100 | 98  | 94 | 89 | 107 | 95  | 113                | 113 | 109 | 101 | 99  | 97  | 93 | 87 | 106 | 95  |
| 1200                       | 40   | 116               | 115 | 111 | 102 | 100 | 96  | 92 | 87 | 107 | 96  | 117                | 117 | 111 | 104 | 100 | 97  | 92 | 86 | 108 | 97  |

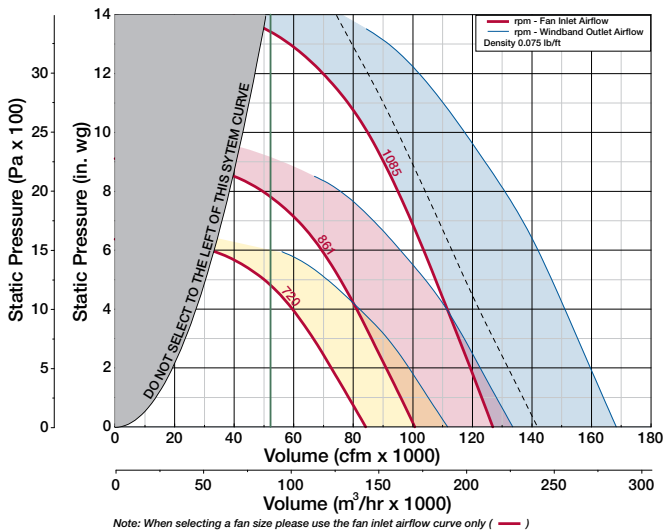
The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

# Vektor-CD Size 60

## Inlet Airflow



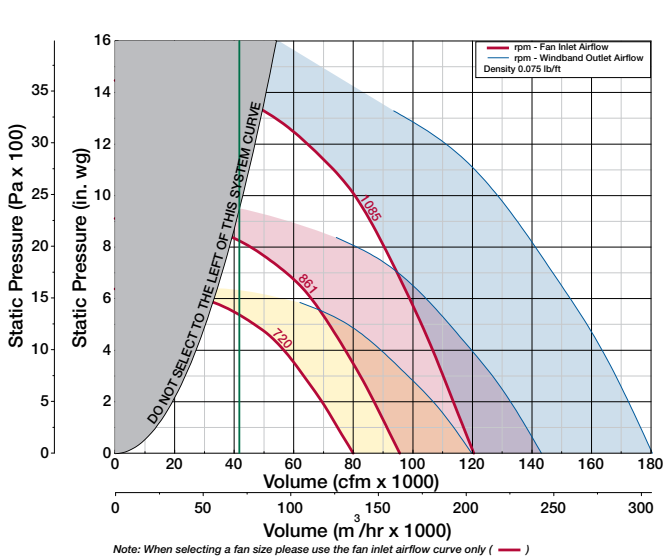
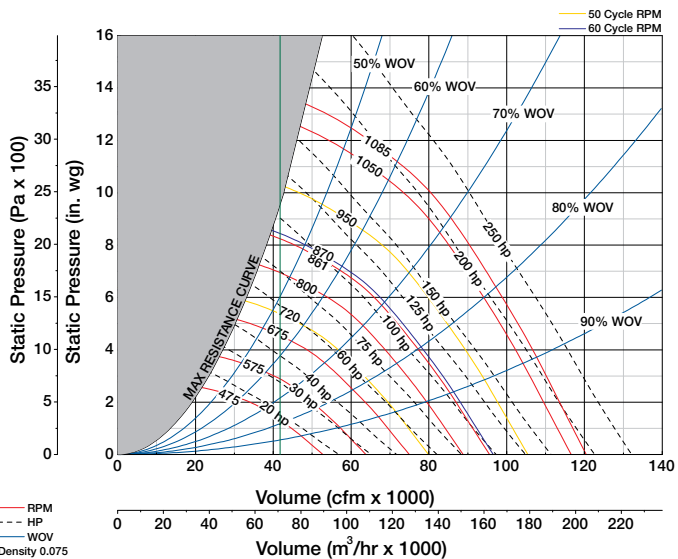
## Outlet Airflow



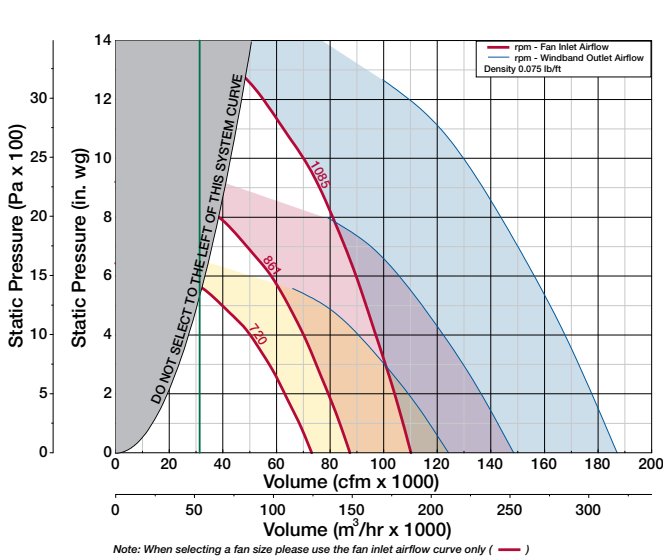
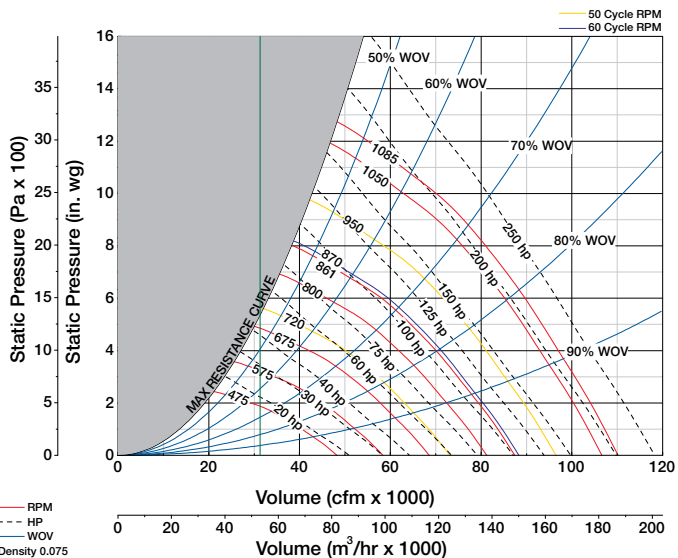
**AIR DATA**

**LV**  
Low Velocity

**MV**  
Medium Velocity



**HV**  
High Velocity



Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).

|   |
|---|
| 100% Wheel Width  |
| Windband Outlet Area = 33.18 ft <sup>2</sup>                      |
| Class II Fan Max rpm = 861  |
| Class III Fan Max rpm = 1085                                      |
| Effective Plume @ 10 mph Crosswind Height {ft}                    |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.196)}{880} + 21.17$ |

| Performance Data             | LV                               | MV                               | HV                               |
|------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Nozzle Velocity {ft/min}     | Fan cfm<br>17.39 ft <sup>2</sup> | Fan cfm<br>13.91 ft <sup>2</sup> | Fan cfm<br>10.44 ft <sup>2</sup> |
| % WOV                        | cfm x 100<br>rpm x 117           | cfm x 100<br>rpm x 111           | cfm x 100<br>rpm x 102           |
| 3000 fpm: Inlet Airflow Rate | 52178 cfm                        | 41742 cfm                        | 31307 cfm                        |

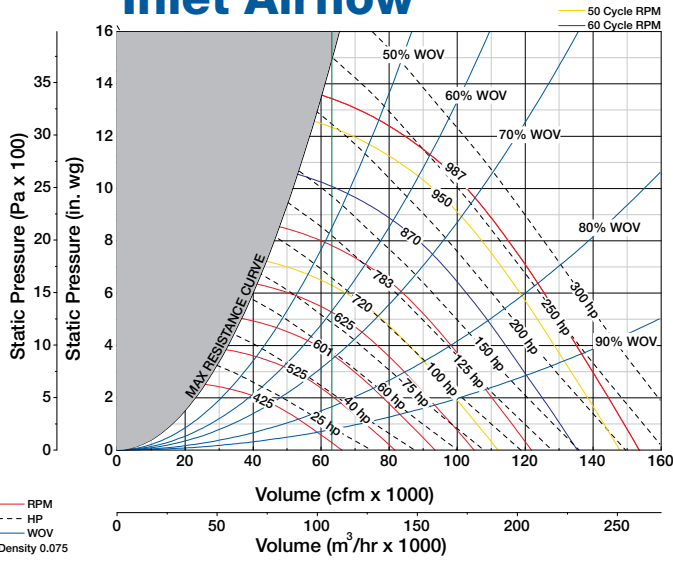
## Vektor-CD Size 60 (HV Nozzle)

| Sound Power by Octave Band |      |                   |     |     |     |     |     |    |    |     |     |                    |     |     |     |     |     |    |    |     |     |
|----------------------------|------|-------------------|-----|-----|-----|-----|-----|----|----|-----|-----|--------------------|-----|-----|-----|-----|-----|----|----|-----|-----|
|                            |      | Inlet Sound Power |     |     |     |     |     |    |    |     |     | Outlet Sound Power |     |     |     |     |     |    |    |     |     |
| rpm                        | %WOV | 1                 | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA | 1                  | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA |
| 300                        | 100  | 93                | 84  | 75  | 73  | 68  | 62  | 56 | 46 | 76  | 64  | 92                 | 83  | 78  | 74  | 69  | 62  | 55 | 45 | 76  | 65  |
| 300                        | 80   | 92                | 84  | 75  | 72  | 66  | 62  | 54 | 45 | 75  | 63  | 90                 | 82  | 76  | 72  | 66  | 61  | 53 | 42 | 74  | 63  |
| 300                        | 60   | 89                | 82  | 73  | 71  | 65  | 62  | 54 | 44 | 73  | 62  | 90                 | 81  | 76  | 72  | 66  | 61  | 52 | 42 | 74  | 63  |
| 300                        | 50   | 89                | 82  | 73  | 70  | 64  | 61  | 53 | 44 | 73  | 61  | 89                 | 80  | 76  | 71  | 65  | 60  | 51 | 42 | 73  | 62  |
| 300                        | 40   | 89                | 82  | 74  | 69  | 64  | 60  | 52 | 44 | 73  | 61  | 89                 | 82  | 76  | 71  | 64  | 59  | 51 | 42 | 73  | 62  |
| 400                        | 100  | 99                | 89  | 81  | 79  | 77  | 71  | 66 | 60 | 82  | 71  | 94                 | 86  | 82  | 80  | 78  | 71  | 65 | 58 | 82  | 71  |
| 400                        | 80   | 97                | 88  | 80  | 79  | 75  | 70  | 64 | 57 | 81  | 70  | 92                 | 85  | 81  | 79  | 75  | 69  | 63 | 54 | 81  | 69  |
| 400                        | 60   | 94                | 86  | 78  | 78  | 74  | 70  | 64 | 58 | 80  | 69  | 91                 | 84  | 79  | 78  | 74  | 69  | 63 | 54 | 80  | 68  |
| 400                        | 50   | 94                | 85  | 78  | 76  | 73  | 69  | 63 | 57 | 79  | 67  | 94                 | 84  | 79  | 77  | 73  | 69  | 62 | 54 | 79  | 68  |
| 400                        | 40   | 95                | 87  | 79  | 77  | 72  | 69  | 63 | 57 | 79  | 68  | 93                 | 85  | 81  | 77  | 72  | 68  | 61 | 54 | 79  | 68  |
| 600                        | 100  | 105               | 106 | 94  | 90  | 89  | 85  | 78 | 74 | 95  | 84  | 101                | 101 | 93  | 91  | 89  | 86  | 78 | 72 | 94  | 83  |
| 600                        | 80   | 103               | 105 | 92  | 88  | 87  | 83  | 77 | 73 | 94  | 82  | 100                | 99  | 92  | 89  | 87  | 82  | 76 | 69 | 92  | 81  |
| 600                        | 60   | 102               | 102 | 90  | 88  | 86  | 82  | 77 | 72 | 92  | 81  | 99                 | 97  | 89  | 88  | 86  | 81  | 76 | 69 | 91  | 79  |
| 600                        | 50   | 103               | 102 | 90  | 87  | 85  | 81  | 77 | 71 | 92  | 80  | 102                | 97  | 89  | 87  | 85  | 81  | 76 | 69 | 90  | 79  |
| 600                        | 40   | 105               | 102 | 92  | 87  | 84  | 80  | 76 | 70 | 92  | 80  | 106                | 98  | 91  | 88  | 84  | 80  | 75 | 68 | 91  | 79  |
| 800                        | 100  | 103               | 111 | 100 | 98  | 97  | 97  | 87 | 82 | 103 | 92  | 105                | 109 | 100 | 98  | 96  | 95  | 86 | 80 | 102 | 90  |
| 800                        | 80   | 102               | 109 | 98  | 97  | 95  | 94  | 85 | 81 | 101 | 89  | 103                | 107 | 98  | 97  | 95  | 91  | 84 | 78 | 100 | 88  |
| 800                        | 60   | 102               | 107 | 96  | 96  | 94  | 91  | 85 | 81 | 99  | 88  | 102                | 105 | 96  | 95  | 93  | 90  | 84 | 78 | 98  | 87  |
| 800                        | 50   | 106               | 107 | 97  | 95  | 93  | 90  | 84 | 81 | 99  | 87  | 107                | 105 | 95  | 94  | 92  | 89  | 83 | 78 | 98  | 86  |
| 800                        | 40   | 109               | 108 | 98  | 95  | 92  | 88  | 83 | 80 | 99  | 87  | 112                | 106 | 99  | 96  | 92  | 89  | 83 | 78 | 99  | 87  |
| 1085                       | 100  | 110               | 117 | 112 | 105 | 104 | 105 | 98 | 91 | 111 | 100 | 113                | 118 | 111 | 106 | 103 | 103 | 98 | 89 | 110 | 99  |
| 1085                       | 80   | 110               | 116 | 110 | 104 | 102 | 102 | 96 | 89 | 109 | 98  | 110                | 115 | 109 | 105 | 102 | 100 | 94 | 87 | 108 | 97  |
| 1085                       | 60   | 109               | 115 | 108 | 102 | 101 | 99  | 94 | 89 | 107 | 96  | 110                | 114 | 107 | 102 | 100 | 99  | 93 | 87 | 107 | 95  |
| 1085                       | 50   | 114               | 115 | 108 | 102 | 100 | 98  | 94 | 89 | 107 | 95  | 115                | 114 | 107 | 102 | 100 | 98  | 93 | 87 | 106 | 95  |
| 1085                       | 40   | 118               | 116 | 109 | 102 | 100 | 97  | 92 | 88 | 107 | 96  | 120                | 117 | 110 | 104 | 100 | 97  | 92 | 86 | 108 | 96  |

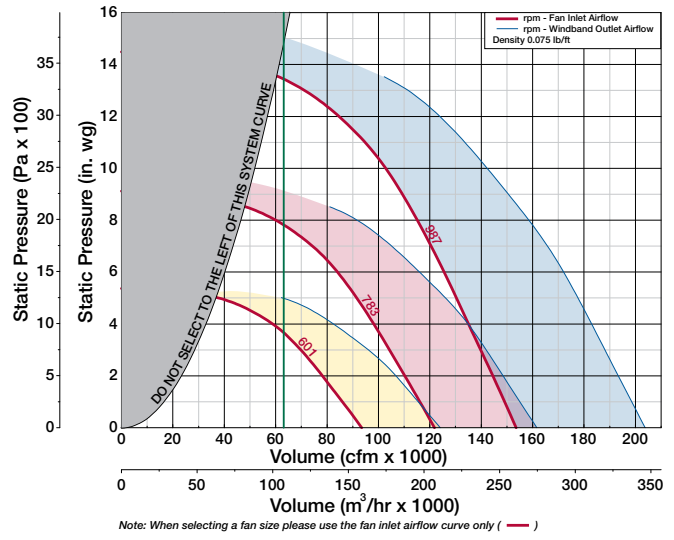
The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

# Vektor-CD Size 66

## Inlet Airflow



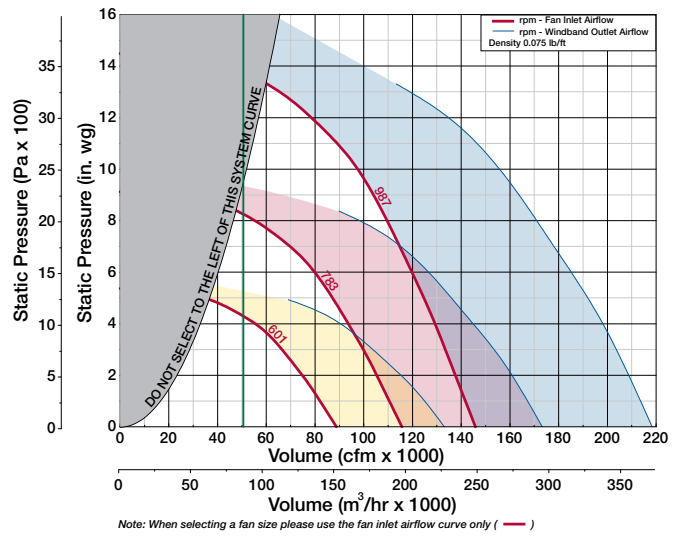
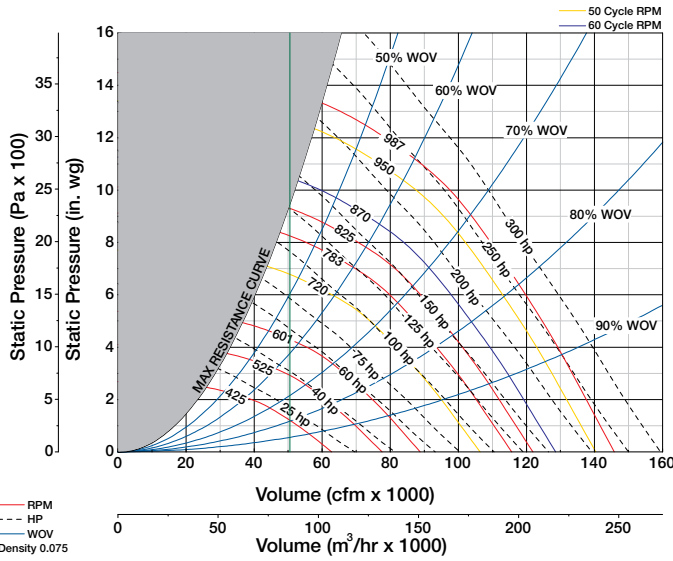
## Outlet Airflow



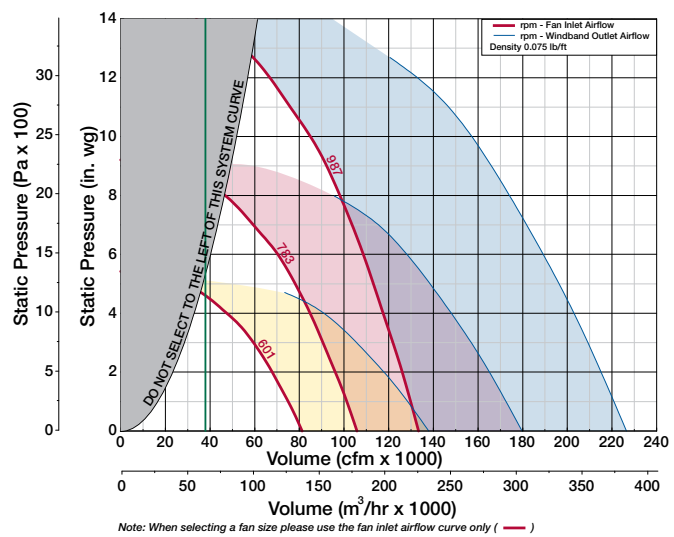
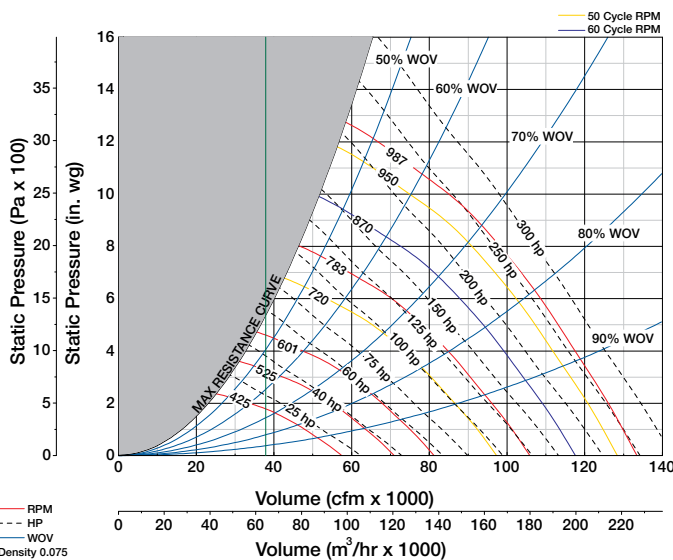
**AIR DATA**

**LV**  
Low Velocity

**MV**  
Medium Velocity



**HV**  
High Velocity



Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Power ratings (Bhp) do not include transmission losses. Performance ratings do not include the effects of cross winds.

Performance certified is for installation Type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Performance ratings do not include the effects of cross winds. The AMCA Certified Ratings Seal applies to induced flow fan air performance and sound (AMCA Standard 260).



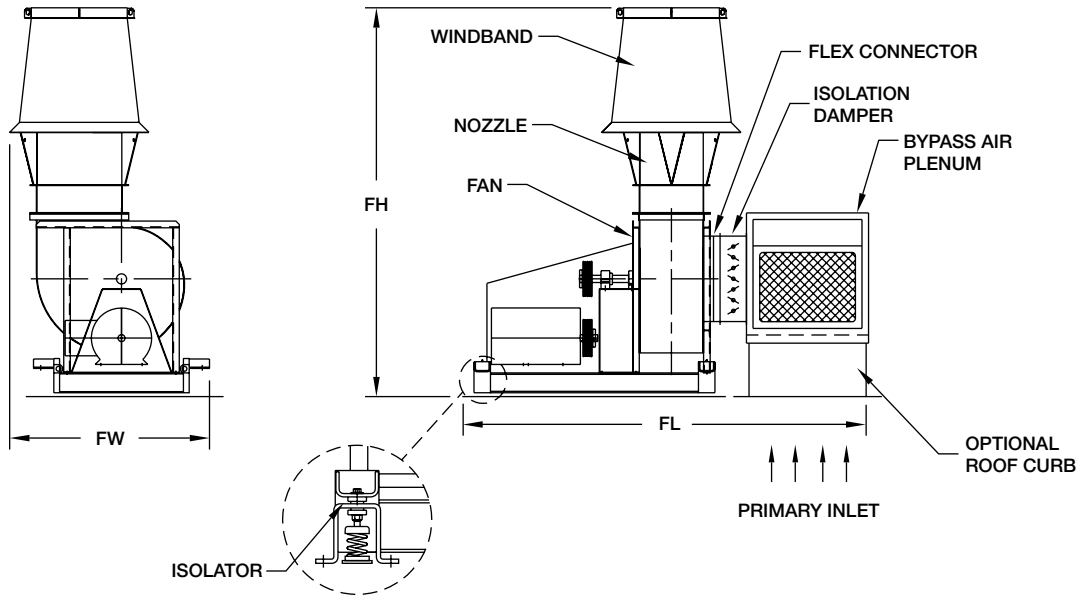
|   |
|---|
| 100% Wheel Width  |
| Windband Outlet Area = 40.06 ft <sup>2</sup>                      |
| Class II Fan Max rpm = 783  |
| Class III Fan Max rpm = 987                                       |
| Effective Plume @ 10 mph Crosswind Height {ft}                    |
| $\frac{(3 * \text{Windband Outlet Volume} * 0.178)}{880} + 23.25$ |

| Performance Data             | LV                               | MV                               | HV                               |
|------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Nozzle Velocity {ft/min}     | Fan cfm<br>21.05 ft <sup>2</sup> | Fan cfm<br>16.84 ft <sup>2</sup> | Fan cfm<br>12.63 ft <sup>2</sup> |
| % WOV                        | cfm x 100<br>rpm x 156           | cfm x 100<br>rpm x 148           | cfm x 100<br>rpm x 135           |
| 3000 fpm: Inlet Airflow Rate | 63135 cfm                        | 50508 cfm                        | 37881 cfm                        |

## Vektor-CD Size 66 (HV Nozzle)

| Sound Power by Octave Band |      |                   |     |     |     |     |     |    |    |     |     |                    |     |     |     |     |     |    |    |     |     |
|----------------------------|------|-------------------|-----|-----|-----|-----|-----|----|----|-----|-----|--------------------|-----|-----|-----|-----|-----|----|----|-----|-----|
|                            |      | Inlet Sound Power |     |     |     |     |     |    |    |     |     | Outlet Sound Power |     |     |     |     |     |    |    |     |     |
| rpm                        | %WOV | 1                 | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA | 1                  | 2   | 3   | 4   | 5   | 6   | 7  | 8  | LwA | dBA |
| 250                        | 100  | 89                | 80  | 73  | 71  | 65  | 60  | 52 | 43 | 73  | 61  | 89                 | 79  | 76  | 72  | 66  | 60  | 51 | 42 | 74  | 62  |
| 250                        | 80   | 87                | 79  | 72  | 70  | 63  | 59  | 50 | 42 | 71  | 60  | 87                 | 77  | 75  | 69  | 63  | 58  | 49 | 38 | 72  | 60  |
| 250                        | 60   | 85                | 78  | 71  | 69  | 63  | 60  | 50 | 41 | 71  | 59  | 87                 | 76  | 75  | 69  | 63  | 58  | 48 | 38 | 71  | 60  |
| 250                        | 50   | 85                | 78  | 71  | 67  | 62  | 59  | 49 | 41 | 70  | 58  | 86                 | 76  | 75  | 68  | 62  | 57  | 48 | 38 | 71  | 59  |
| 250                        | 40   | 85                | 78  | 71  | 67  | 61  | 58  | 49 | 41 | 70  | 58  | 86                 | 77  | 75  | 68  | 61  | 56  | 47 | 39 | 71  | 59  |
| 350                        | 100  | 98                | 88  | 80  | 79  | 76  | 70  | 65 | 59 | 82  | 70  | 93                 | 86  | 82  | 79  | 77  | 70  | 64 | 57 | 82  | 70  |
| 350                        | 80   | 96                | 87  | 79  | 78  | 73  | 69  | 63 | 56 | 80  | 69  | 91                 | 85  | 80  | 78  | 74  | 68  | 61 | 53 | 80  | 68  |
| 350                        | 60   | 94                | 85  | 78  | 77  | 73  | 69  | 63 | 57 | 79  | 68  | 90                 | 83  | 79  | 77  | 73  | 68  | 61 | 53 | 79  | 67  |
| 350                        | 50   | 94                | 84  | 77  | 76  | 72  | 68  | 62 | 56 | 78  | 67  | 91                 | 83  | 79  | 76  | 72  | 68  | 60 | 53 | 78  | 67  |
| 350                        | 40   | 94                | 86  | 79  | 76  | 71  | 68  | 61 | 56 | 79  | 67  | 90                 | 84  | 80  | 76  | 71  | 67  | 60 | 53 | 78  | 67  |
| 500                        | 100  | 106               | 100 | 90  | 89  | 87  | 82  | 76 | 72 | 92  | 81  | 101                | 96  | 92  | 89  | 88  | 82  | 75 | 70 | 92  | 81  |
| 500                        | 80   | 105               | 99  | 89  | 87  | 85  | 81  | 75 | 70 | 91  | 79  | 100                | 94  | 90  | 88  | 85  | 79  | 73 | 66 | 90  | 79  |
| 500                        | 60   | 102               | 96  | 87  | 86  | 84  | 80  | 75 | 69 | 89  | 78  | 98                 | 92  | 87  | 86  | 84  | 79  | 73 | 66 | 89  | 77  |
| 500                        | 50   | 103               | 96  | 87  | 85  | 83  | 79  | 74 | 69 | 89  | 77  | 99                 | 93  | 87  | 86  | 83  | 78  | 73 | 66 | 88  | 77  |
| 500                        | 40   | 104               | 97  | 88  | 85  | 82  | 78  | 73 | 68 | 89  | 77  | 101                | 94  | 89  | 86  | 82  | 77  | 72 | 66 | 88  | 77  |
| 700                        | 100  | 103               | 109 | 99  | 98  | 97  | 96  | 86 | 81 | 102 | 91  | 104                | 108 | 100 | 98  | 96  | 94  | 85 | 80 | 101 | 90  |
| 700                        | 80   | 102               | 108 | 98  | 96  | 95  | 93  | 84 | 80 | 100 | 89  | 102                | 106 | 99  | 97  | 95  | 90  | 83 | 77 | 100 | 88  |
| 700                        | 60   | 102               | 106 | 96  | 95  | 93  | 90  | 84 | 80 | 98  | 87  | 102                | 105 | 96  | 94  | 93  | 89  | 82 | 77 | 98  | 86  |
| 700                        | 50   | 105               | 106 | 96  | 94  | 92  | 89  | 84 | 80 | 98  | 86  | 106                | 104 | 95  | 94  | 92  | 88  | 82 | 77 | 97  | 86  |
| 700                        | 40   | 108               | 107 | 97  | 94  | 91  | 88  | 82 | 79 | 98  | 86  | 111                | 105 | 98  | 95  | 92  | 87  | 82 | 77 | 98  | 86  |
| 987                        | 100  | 112               | 118 | 110 | 106 | 105 | 105 | 98 | 91 | 111 | 100 | 114                | 118 | 110 | 106 | 104 | 104 | 97 | 89 | 111 | 99  |
| 987                        | 80   | 111               | 116 | 109 | 104 | 103 | 102 | 95 | 90 | 109 | 98  | 111                | 115 | 108 | 105 | 103 | 101 | 93 | 87 | 109 | 97  |
| 987                        | 60   | 111               | 115 | 107 | 103 | 102 | 100 | 94 | 90 | 108 | 96  | 111                | 114 | 105 | 103 | 101 | 99  | 93 | 87 | 107 | 95  |
| 987                        | 50   | 115               | 115 | 107 | 103 | 101 | 99  | 94 | 89 | 107 | 96  | 116                | 114 | 105 | 102 | 100 | 98  | 93 | 87 | 106 | 95  |
| 987                        | 40   | 119               | 116 | 108 | 103 | 100 | 97  | 92 | 88 | 107 | 96  | 121                | 116 | 109 | 105 | 101 | 97  | 92 | 86 | 108 | 96  |

The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. Values shown are for inlet L<sub>wi</sub>, L<sub>wi</sub>A and outlet L<sub>wo</sub>, L<sub>wo</sub>A sound power levels for installation Type A: Free inlet, Free outlet. dBA levels shown represent sound pressure levels 5 feet from the fan in a hemispherical free field. dBA levels are not licensed by AMCA International.

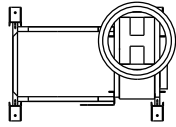


*Note: Dimensions are subject to change. Contact your local Greenheck representative for detailed dimensional information.*

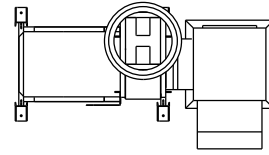
| Size | FL (in.) | FW (in.) | FH (in.) |
|------|----------|----------|----------|
| 12   | 103      | 39       | 72*      |
| 15   | 106      | 43       | 82*      |
| 18   | 113      | 49       | 93*      |
| 22   | 122      | 57       | 111*     |
| 24   | 125      | 61       | 117      |
| 27   | 130      | 66       | 129      |
| 30   | 139      | 71       | 139      |
| 33   | 152      | 79       | 153      |
| 36   | 155      | 85       | 164      |
| 40   | 178      | 93       | 179      |
| 44   | 191      | 101      | 196      |
| 49   | 207      | 110      | 213      |
| 54   | 219      | 120      | 234      |
| 60   | 232      | 127      | 254      |
| 66   | 246      | 133      | 279      |

\* Optional stack extensions available to meet NFPA 45 10 ft. minimum physical height guideline.

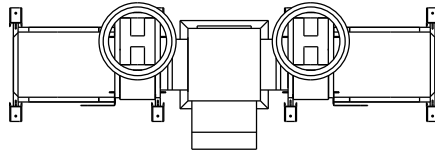
1. Dimensions are in inches. Dimensions are approximate, consult factory for detailed dimensions.
2. Inlet duct (by others) shall be sized so primary air enters plenum at 1500 fpm or less.
3. As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.



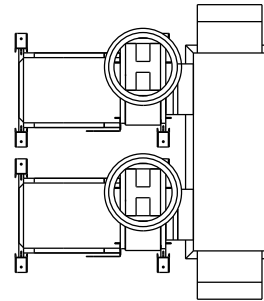
**Vektor-CD**  
Single Fan System



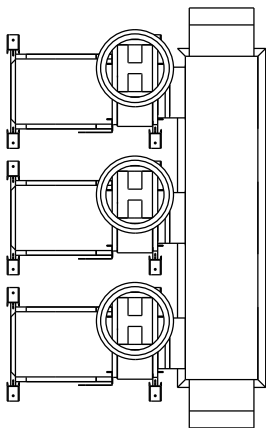
**Vektor-CD**  
Single Fan System  
with Plenum



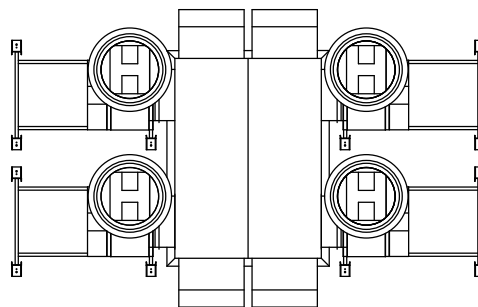
**Vektor-CD**  
Opposed Fan System



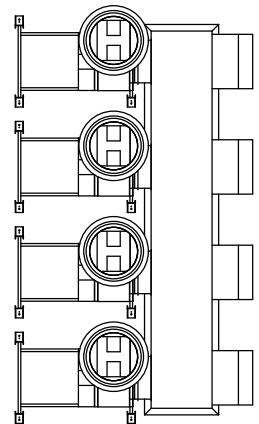
**Vektor-CD**  
Dual Fan System



**Vektor-CD**  
Triple Fan System



**Vektor-CD**  
Opposed Dual Fan System

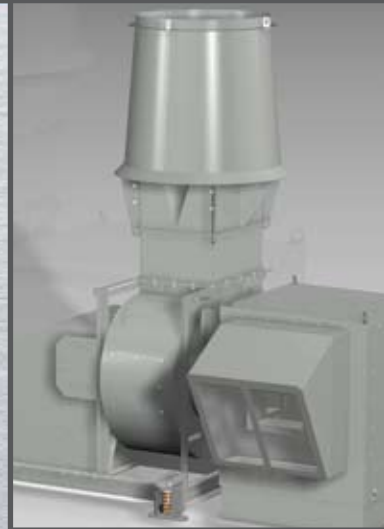


**Vektor-CD**  
Quad Fan System

**AMCA  
260  
Tested**

## Family of Lab Exhaust Systems


# VEKTOR™



U.S. Patents:  
7048499; 7320636  
Mexico Patent:  
243465  
China (PR) Patent:  
CN1294361 C  
Singapore Patents:  
124106, 124135  
Other Patents  
Pending



Singapore Patent:  
124105  
Other Patents  
Pending

|   | Vektor-H   | Vektor-MD                                  | Vektor-CD                                  |
|---|--|--|--|
| Housing Style   | Inline Centrifugal   | Inline Mixed Flow                          | Centrifugal                                |
| Stack Style   | High Plume Nozzle  | High Plume Dilution Nozzle                 | High Plume Dilution Nozzle                 |
| Min Flow  | 270 cfm (850 m <sup>3</sup> /hr)   | 1,500 cfm (2,550 m <sup>3</sup> /hr)       | 500 cfm (850 m <sup>3</sup> /hr)           |
| Max Flow  | 24,000 cfm (40,750 m <sup>3</sup> /hr)   | 80,000 cfm (135,900 m <sup>3</sup> /hr)    | 140,000 cfm (237,870 m <sup>3</sup> /hr)   |
| Max ESP   | Up to 3.5 in. wg (875 Pa)  | Up to 8 in. wg (2000 Pa)                   | Up to 14 in. wg (3500 Pa)                  |
|  UL US LISTED | Listed for Electrical 705 (File no. 40001) and Grease Removal 762 Power Ventilators for Restaurant Exhaust Appliances (File no. MH11745) | Listed for Electrical 705 (File no. 40001) | Listed for Electrical 705 (File no. 40001) |
| AMCA Certification  | Sound and Air Performance  | Induced Flow Fan Air and Sound Performance | Induced Flow Fan Air and Sound Performance |
| Warranty  | 1 Year   | 3 Years                                    | 3 Years                                    |

## Our Warranty

Greenheck warrants this equipment to be free from defects in material and workmanship for a period of one year (Vektor-H) or three years (Vektor-MD, Vektor-CD) from the purchase date. Any units or parts which prove defective during the warranty period will be replaced at our option when returned to our factory, transportation prepaid. Should motors furnished by Greenheck prove defective during this period, they should be returned to the nearest authorized motor service station. Greenheck will not be responsible for any removal or installation costs.

*As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.*



Prepared to Support  
Green Building Efforts

